NATIONAL MUSEUM MELBOURNE

Frontispiece. NEW "ROOM" SHOW-CASE, No. 1.—EMUS.

MEMOIRS

OF THE

QUEENSLAND MUSEUM

VOL. III.

WITH PLATES AND FIGURES IN THE TEXT.

EDITED BY THE DIRECTOR

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NATIONAL MUSEUM MELBOURNE

NEW "ROOM" SHOW-CASE, NO. 2.—KANGAROOS AND WALLABIES.

NEW "ROOM" SHOW-CASES IN QUEENSLAND MUSEUM.

(Plates I–IV.)

NATIONAL MUSEUM MELBOURNE

The ground-floor attractions of the Queensland Museum have been greatly increased by the opening of four large room-cases, each practically 12 feet square. These were formed by the casing-in of alcoves, the cost of construction thus being small when compared with the results obtained. Whilst arranging these cases, precedence was given to the more characteristic Australian animals. In the one (*see* Plate I) adjoining the Bird Court, a number of Emus, with young and eggs, are appropriately grouped in plain country representing the habitat in which they were secured. Large head and side labels give both scientific and popular information as to the classification and habits of these birds.

Representatives of the genus *Macropus* are given a natural setting—although unavoidably crowded—around a waterhole in the case illustrated by Plate II. The artist-taxidermist (Mr. A. Alder) has skilfully introduced stony country, and this fades so imperceptibly into the background that it is difficult to say which stones belong to the canvas painting. A key to the species is given by means of a diagram, with circles placed to correspond with the position of different animals.

Australian *Phalangeridæ* form the principal objects of the third case (Plate III). A scrub scene occupies the background, and in the distance the artist has worked in the outlines of a Queensland mountain. Included here are the beautiful North Queensland Opossums (*Dactylopsila trivirgata, Pseudochirus archeri,* and *P. herbertensis*). This case is one of the most striking objects in the Museum.

In the fourth case (Plate IV), Polyprotodont specimens have been introduced, among them being the Tasmanian "Devil," the Marsupial Wolf, Native Cats or Dasyures, and the Bandicoots. Wombats are also shown, these being in

characteristie association with a burrow. In this, as in the preeeding ease, it has not been possible to adhere strictly to close classifieation, and thus representatives of more than one family appear together. With the aeeommodation at present available, a restricted group system would have prevented the exhibition of many speeimens of great interest. In order to simulate as nearly as possible a natural environment, several other specimens quite outside the Marsupialia, sueh as butterflies, a bird. a snake and a lizard, appear as in their usual condition. Unfortunately, it has not been possible to avoid using a small proportion of old and imperfect material in these eases, but as time goes on it is antieipated that these will be replaced by new specimens. Side labels giving descriptive and systematie information have been introduced on a generous scale. At a distance of 2 feet, a brass bar is placed in front of each ease, and the glass fronts are thus protected.—H.A.L.

NEW "ROOM" SHOW-CASE, No. 3.

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NEW "ROOM" SHOW CASE, No. 4.

Face page 3.

ON CERTAIN IMPLEMENTS OF SUPERSTITION AND MAGIC.

ILLUSTRATED BY SPECIMENS IN THE QUEENSLAND MUSEUM COLLECTIONS.

By R. Hamlyn-Harris, D.Sc., Etc. (Director).

(Plate V and Two Text-figures.)

The appalling rapidity with which the Queensland aborigines are dying out justifies the publication of these few particulars. Every year the chance of saving their relics and the story they have to tell becomes more and more remote, and indeed it is questionable whether even now it is not too late. There are few localities in Queensland where the influences of civilisation are not apparent, and the native of to-day when speaking of himself and his forbears prefers to draw upon his imagination rather than speak the unsophisticated truth; sometimes he is unable to do so, but be that as it may, the difficulty of sifting the truth from that which is false is becoming increasingly more difficult. These facts were brought home to me afresh during a recent tour in North Queensland, observing this kind of thing at first hand. Little reliance can now, unfortunately, be placed upon anything a blackfellow tells you except in very rare instances. His imaginative faculties run riot on every possible occasion, and the more credulous you become the more does he delight to impose upon you. I have often been struck, in conversation with a native, how imperfect his memory seems to be and how easily connected ideas fade into insignificance, characteristics leading to the rapid elimination of knowledge of customs and beliefs. It is astonishing, also, how easily the native brings himself to believe that which he fancies to be the case. I do not think this ignorance is assumed, but real.

I have seen implements and weapons made by aboriginals about which there can be no possible doubt that they are of modern manufacture, with ideas incorporated, which they themselves have acquired within the last decade or so—implements which bear in every detail of their manufacture the mark of a bungler—and yet these people will declare most solemnly that they and their forefathers have used such from time immemorial. In order to safeguard the interests of scientific research, it is necessary that some mention should be

made of this, especially in view of the fact that tons of material of such faked implements leave our shores yearly to find a way into the collections of other countries; hence it is well to place those that are not aware of it on their guard, and in the interests of square-dealing to question the honesty and integrity of those whites who cause the natives to indulge in such practices, purely for the financial advantage that may accrue.

With the advance of civilisation, magical practices particularly are the first to retreat into the background, and hence the importance of saving every possible record while opportunity permits. The Queensland aborigine differs from his brethren in central and other parts of Australia by the comparative simplicity of his public life. The absence of such elaborate totemic organisations and devices as are recorded of the Arunta[1] tribe, for instance, has doubtless been instrumental in limiting the power of the heads or so-called medicine men of the tribes, and consequently there is an accompanying decrease of magic and superstition, which seems to be particularly noticeable in Queensland, and manifests itself in various ways. Further, it is very suggestive that the absence of "hereditary chieftainships" synchronizes with the non-existence of elaborate ceremonial totemism. There is a remarkable paucity of objects associated with superstitious ideas, and although doubtless many a simple stone, stick, or "what not" may have been used for magical purposes in the past, unfortunately history records but few instances. The cause and effect is doubtless due directly or indirectly to the food supply, for as long as the country can guarantee the native a liberal diet, the tribes, nomadic only within a limited area, live comparatively peacefully and the exercise of magical influences becomes correspondingly diminished. The death of any one member of their tribe, natural or otherwise, was always the signal for revenge and lust, and their firm belief that death could only be due to the evil intentions of someone else was doubtless responsible for the magical death-bone as a medium by which such a death could be easily avenged. The use of the death-bone[2] has been almost universal[3] and is still in vogue to-day in some of the out-of-the-way places of the State, but whether it is actually "pointed" and "sung" or not, its presence alone is still a powerful safeguard in the possession of such as would seek protection from the hands of a wilful foe; many women never venturing out after nightfall without having such a bone carefully secreted in their hands.[4] The concealment of the death-bone is responsible for much ingenuity on the part of the native at times.

[1] Spencer and Gillen, The Northern Tribes of Central Australia, 1904.

[2] Dr. W. E. Roth, North Queensland Ethnography—Superstition, Magic, and Medicine—Bulletin 5, paragraph 144, Brisbane, 1903.

[3] Miss C. C. Petrie tells me that her father, Mr. Tom Petrie, knew no death-bone amongst the members of the old Brisbane (Turrbal) tribe. This is very astonishing.

[4] On the authority of Mr. M. J. Colclough.

Text-fig. 1.—Radiograph of the Death-bone.
Shown in Plate V, fig. 1. Specimen No.: Q. M. E 14/558.

From the aborigines of the Roper River district, the Wongalarra tribe (Urapunga), Northern Territory, where death-bones are usually of the smaller variety, comes a ceremonial head-dress collected by Mr. M. J. Colclough in 1909, carrying in its interior a death-bone, the presence of which is entirely unknown to anyone save the owner. When the plume is no longer in use the death-bone is placed in its bark sheath and secreted away. (Q. M. Specimen No. E 11/30A.) Plate V, Figure 1, demonstrates a Burdekin River specimen of a death-bone in a bark sheath, bound with human hair and securely fastened with native gum, both ends of the sheath being provided with tufts of emu feathers. The sheath of such a specimen as this is really intended as a disguise, and as the bone is securely fastened with gum one would naturally suppose that it would not be withdrawn except on special occasions. In reality, this is the case. Only at great ceremonies—arranged to settle all kinds of disputes—would such a death-bone be opened up and used, to be again sealed securely after the affair was over. Text-figure 1 is a radiograph[5] of this implement showing the outlines of the death-bone in its interior; the bone probably represents the proximal end of an emu tibia with part of the fibula in position, the upper portion being anchylosed. This death-bone is typical of a more elaborate implement than is usually used in Queensland. Specimens of this sort are rare. (Q. M. Specimen No. QE 14/558.)

[5] I would here like to acknowledge my indebtedness to Dr. Doyle for his kindness in making the radiograph for me.—R.H.H.

Thomas[6] amongst others tells us that a great part of the medicine used by the aboriginal is mere mummery, magical performances which at best act through suggestion. To the lay aboriginal mind these magical performances are the real thing, and, taught as the native always has been to look upon them with awe and mystery, he really believes in their efficacy; but the medicine man himself knows better, and although the power of the magical is strong upon him, he is nevertheless aware that his whole power and status in the tribe has been acquired through trickery practised when required of him. No one knows better than he the impotency of many of his own methods, which he dare not betray except to the very few selected men, who ultimately share his impostures with him.

One of the most universal practices amongst savages is that surrounding the quartz crystal, which is put to all kinds of uses, and first and foremost represents the native medicine man's principal stock-in-trade. The sucking of a stone or a piece of quartz from the wound of a patient—real or imaginary—is usually accompanied with an amount of magic at the expense of the victim, who is often made to suffer considerable punishment. (Coen River and elsewhere.) Even severe gashes are inflicted before the magic stone can be brought to the surface, the victim never suspecting the fraud that has been practised upon him.

We have in the Queensland Museum collections three wooden hardwood points which are claimed to have been drawn from the head of a sick boy by a native doctor (Glenormiston, N.W.C. Queensland). Q.M. Sp. No. QE 14/547.) There is probably a connection between these and the wooden splinters referred to by Roth[7] as characteristic of certain parts of the Peninsula. In connection with these he says: "Sickness is brought about by some other boy putting a wooden splinter or bone into the patient." Several such bundles of splinters, said to have emanated from the now extinct Lankelly tribe,[8] are also in our collection. (Q. M. Sp. No. QE 14/553 and 554.) One of these also contains two wallaby metatarsals and are undoubtedly charms, though Roth states that "wooden splinters at the Coen are believed to be spear-points,"[9] but even these

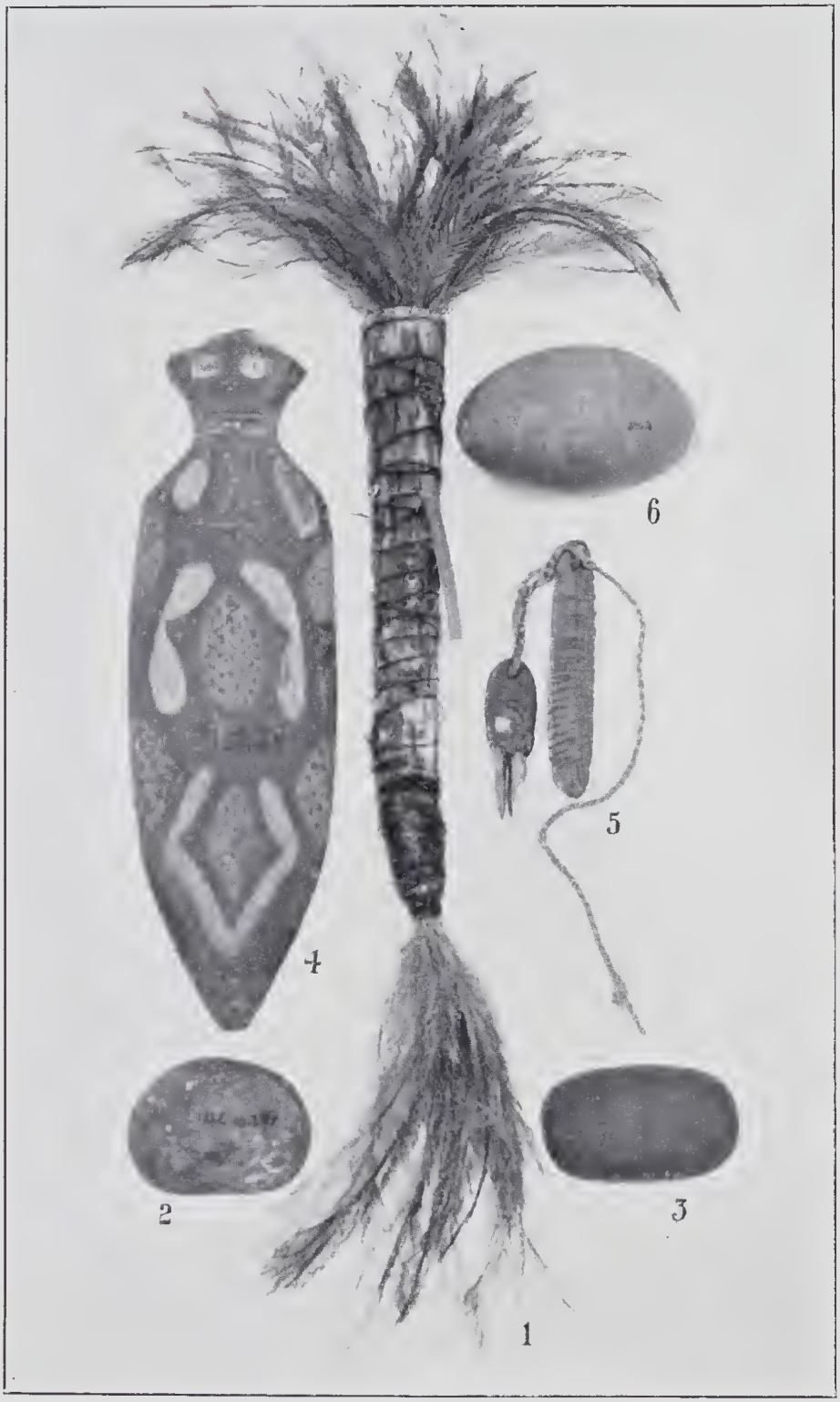
[6] N. W. Thomas, Natives of Australia, 1806, chapter 3, page 43.

[7] Roth, North Queensland Ethnography, Bulletin 5, paragraph 137.

[8] The Lankelly tribe, probably an offshoot of the greater Nggeri-Kudi tribe, occupied the territory along the banks of the Lankelly, a tributary of the Coen (Pennefather) River, Cape York Peninsula.

[9] Roth, Bulletin 5, paragraphs 139 and 140.

NATIONAL MUSEUM MELBOURNE



CERTAIN IMPLEMENTS OF SUPERSTITION AND MAGIC.

Face page 7.

may have been used for magical purposes. Mr. Coghlan, of Glenormiston, to whom we are indebted for a great number of valuable donations, mentions a splinter of wood which had entered the flesh of a combatant during a fight. This was extracted by him and given to the tribesmen, who, after a solemn ceremony, wrapped it in emu feathers and red cloth and were with difficulty persuaded to part with it, since in the hands of an enemy it might be used in sorcery against them. (Q. M. Sp. No. QE 14/552.)

Medicine men of the now extinct Lankelly tribe used the quartz crystal also for reflecting images (Q. M. Sp. No. QE 14/548), and therefore it would not be unreasonable to suppose that even they whiled away their time practising in their crude way the art of "crystal-gazing." That the crystal has been put to other uses as well is evident from the fact that we have in our collections two large quartz crystals joined together with gum and partially coated with human hair on the surface, evidently a crude representation of a bird's head. The exact locality of this charm is unfortunately unknown. (Q. M. Sp. No. QE 14/549.) Charms on the whole are not very plentiful; any pebble or similar object will sometimes do duty as a talisman, and I have seen in North Queensland small stones worn in a dilly-bag under the arm as a protection against all dangers. Fluor-spar also seems to possess a special virtue, why or how used I have never been able to ascertain.

Mr. Thomas Illidge (now of Brisbane), who was for many years in close contact with the natives in the early days, gives me the following account of the efficacy of magic and the wonderful power of suggestion, from his own experience; it is therefore worthy of more than passing notice:—"Many years ago I had a blackboy working for me, but having missed him for a few days I proceeded to the camp and found he was sick, and under the care of an old black 'doctor' who explained to me what was the matter, and his method of treatment. He said the boy was sick because some other blackfellow had cast a spell on him and gave him a pain in his side. The old man's treatment was to put a green (untreated) 'possum-skin (fresh), the hairy side up, over the painful spot, pressed fairly tight. He then made a flat stone about the size of the bottom of a small saucer very hot in the fire, and put it on the 'possum skin and left it as long as the boy could stand it. He said the hot stone melted the fat[10] and that went into the boy and would make him alright. The boy was at work again in a day or two and said he was alright. I looked for that stone but could

[10] Cf. Roth, Ethnological Studies, chapter xi, p. 284.

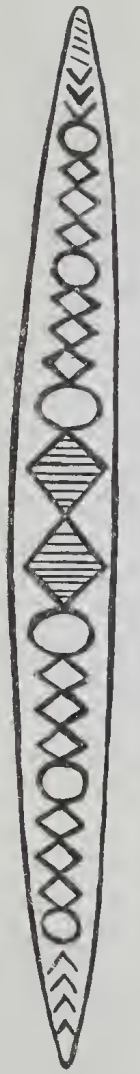
not get it, and the ' doctor ' said, ' Can't find him any more.' It had done its work and I suppose could not be used a second time."

In the Idamere district an emu phalanx, bearing the native name of "Koolburrie" (Q. M. Sp. No. QE 14/555), is used by the women as a cheek and by the men as a hair ornament. The bone, which is cemented at one end with native gum, savours, however, much more of a charm, and I am personally convinced from comparative study of the latter characteristic. Perhaps later further information on this point will be forthcoming. A curious gin's charm from Boulia, also in the Queensland Museum collections (Q. M. Sp. No. QE 14/557), consists of a pair of kangaroo teeth mounted in gum (not unlike a groover) and fastened to a message stick, cut only on one side (*see* Figure 5, Plate V), and worn round the neck. These details are given on the authority of Mr. J. A. Watson, who collected and donated it. Another charm, shown in Figure 4, Plate V, bearing the native name of " Tikovana," or " Mantaka," comes from the locality of the Herbert River (Q. M. Sp. No. QE 14/559.) It is reputed to have been used in battle, and consists of a rude oval of very soft wood, the upper portion of which is decorated with a painted human face (eyes sunk into the wood), whilst the lower portion is elaborately painted in black, red, and yellow, and evidently is intended to be worn round the neck. The design is so remarkably like those of certain fire-sticks from the localities of Cardwell and the Johnstone River, that one cannot fail to be struck with the similarity; hence it is not outside the bounds of possibility that this charm may be the result of a little modern imagination.

Magic stones of various sizes and of natural shapes are variously employed. At Glenormiston a magic stone, in shape not unlike an emu egg, though smaller, is used for emu capture (*see* Figure 6, Plate V.) (Q. M. Sp. No. QE 14/390.) To obtain a plentiful harvest of emu eggs a nest-like hollow is formed on a hilltop and the emu " Mulkari " laid on it; incantations are then made to propitiate the " Mulkari " or supernatural influence whose favour is sought.[11] Magic medicine stones occurred to my knowledge in the Cairns district and were in vogue for curing headache by tapping the affected parts more or less energetically, according to the severity of the symptoms; the effects of such magic would doubtless be very efficacious. (Q. M. Sp. Nos. QE 14/391 and 392.) (*See* Figures 2 and 3, Plate V.)

[11] Doubtless the spirit of " Mulkari " of the North Queensland medicine men is the same as referred to here. *See* Roth, Ethnological Studies, chap. xi, para. 260; Ibid., chap. 13, para. 320.

The amulet to which Roth refers[12] may be described as "a eure-all." A number of specimens in the Queensland Museum collections were examined by me under X rays, and disclosed the fact that only a very small minority carry a piece of slender bone in their interior. (Q. M. Sp. No. QE 14/560.)



Text-fig 2.—Queensland Rain-Stick, obverse side ($\frac{1}{3}$ reduction). West of Clermont. The reverse side is quite plain. Specimen No.: Q.E. 15/612.

An interesting example of a rain-stick has recently been presented to the Queensland Museum, and I am indebted to the donor, Mr. T. Illidge, for the few details regarding it. This carved stick, 755 mm. in length, is one originally used by Queensland aboriginals[13] west of Clermont for the purpose of making rain. The stick, quite plain on the under side, was much valued and, as with similar instruments used elsewhere, was tabu to the women, and has much in common with those referred to by Roth.[14] The method of use was for one of the old members of the tribe, without the knowledge of the camp, to hide this stick in one of the half-dried-up waterholes, then notify to the camp the necessity of a corrobboric; after which the men only, accompanied by the old man as guide, commenced a search, visiting a number of holes before reaching the correct one, where the stick was unearthed. They then gathered themselves together in a circle and threw mud and water up in the air and over themselves until sunset, when they returned to camp and commeneed another dance in which all male members of the camp took part and waited expectantly for the downpour of rain. All over, the stick would be again secreted in some rocky cave, where it would remain until further required. The text-figure gives a good idea of the carving on the surface, the circles representing the sun and moon.

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[12] Roth, North Queensland Ethnography, Bulletin 5, paragraph 154.

[13] For purposes of convenience I am using the term "Aboriginal" in a more restricted sense as denoting individualistic traits in contradistinction to racial characteristics as implied by "Aborigine."

[14] W. E. Roth, Ethnological Studies, chap. xii.

SOME EVIDENCES OF PAPUAN CULTURE ON CAPE YORK PENINSULA.

AS ILLUSTRATED BY SPECIMENS IN THE QUEENSLAND MUSEUM COLLECTIONS.

By R. Hamlyn-Harris, D.Sc., Etc. (Director).

(Plate VI.)

More writers than one have referred to presumed Papuan culture on Cape York Peninsula, and the list of objects illustrating it is now a formidable one. The Queensland aboriginal was never an inventive genius, and his implements and weapons are remarkably constant, but that he is a born mimic and imitator is very apparent. Hence it is not to be wondered at that he at times, under the influences of foreign infiltration, discarded some of his native implements for those of other peoples, instances of which may be found in the substitution of the primitive few coverings for the luxury of the bark blanket[1] and tappa cloth or the safer outrigger[2] for the original native-bark canoes. The point has been raised as to whether there was an infusion of Papuan blood over this area,[3] but this idea does not meet with favour, especially amongst those acquainted with local conditions in the early days. Even as far back as 1802, when Captain Flinders landed in the Peninsula he found the natives anything but the fierce cannibals that the Dutch had led him to believe they were; " of bow and arrow not the least indication was observed at the Coen River " [or elsewhere].[4]

In spite of the fact that it is said that the bow has been found in the extreme north, it is only to be regarded as an immigrant from New Guinea, no attempt having ever been made by the natives to manufacture such an article. It is, however, interesting to note that Meston in a letter to me says that he found some small boys on the Pascoe River and at two or three other points of the sea-coast using small bows and arrows merely for amusement,[5] the grown men never taking to this weapon. He further says: " The tribes at Cape York,

[1] Walter E. Roth, North Queensland Ethnography, Bulletin 15, paragraph 56, Records of the Australian Museum, 1910.

[2] Ibid., Bulletin 14, Transport and Trade.

[3] N. W. Thomas, Natives of Australia, 1906, page 16.

[4] Flinders, Voyage of Terra Australis in H.M.S. " The Investigator," London, 1814, vol. 2, page 146.

[5] It is extremely interesting to note how soon the boys learn to use their weapons. Quite small youngsters will become adepts at throwing the spear, and their elders give them every encouragement.

the nearest of all to the Papuans, have never, since history has given a record of them, copied the bow and arrow from the Papuans, although used on all the Torres Straits islands. The islanders used both the bow and arrow of Papua and the woomera and woomera spear of the mainland aboriginal, but the mainland men copied nothing from the islanders, their sole weapon being the woomera spear, the nulla and the boomerang being unknown. Nor did they use any shield, all parrying being done with the woomera.'' I think it is fairly evident, from a study of the objects of presumed exotic culture, that the Papuan infiltration had taken place within comparatively recent times, and may be traced to the time when the Papuans were first employed on the Barrier Reef in the bêche-de-mer and pearl-shell fisheries.[6]

That these Papuans should fraternise with the mainland natives on various parts of the coast was only to be expected, and we may be sure that intercourse must have taken place very frequently; hence we find the introduction of the hour-glass pattern in weaving, vegetable pigments used in addition to mineral pigments, plait-work with pandanus, vegetable ornamental strands made with dendrobium.[7] Ear-boring was indulged in, widow basket caps, bamboo tobacco pipes[8] were introduced, and alterations in hut construction[9] became apparent.

Drills and reversible adzes were found more convenient. The wearing of the Conus shell for personal adornment and the hole in the bailer shell[10] for carrying purposes all testify to outside influence. The same may be said of the use of feather-work and initiation masks, and the utility of the sucker-fish in hunting other fish did not fail to attract their attention. Evidence, however, is not quite so strong in support of the pineapple club, or the comb used at Princess

[6] Cf. W. E. Roth, North Queensland Ethnography, Bull. 14, paragraph 11.

[7] Cf. W. E. Roth, North Queensland Ethnography, Bull. 15.

[8] The tobacco pipe in Northern Queensland deserves here a short notice. There are several of these in the collections of the Queensland Museum, and, except in those cases where they are undoubtedly immigrants from New Guinea, they represent a very rough type of poor workmanship. Though sometimes made of bamboo they are frequently manufactured from the stem of a hollow or hollowed-out branch, one end of which is closed with gum and bored with two holes as in the New Guinea pipes, and used in the same way. Several kinds of weeds as well as bamboo segments are smoked. Pipes of this type come from the Cape York Peninsula. We have in our collection, however, one specimen, closed at both ends, which is said to have come from the locality of Moreton: donor, Mr. A. Haly. This specimen (QE 14/572), which is 540 mm. in length, may have been transported there. Another interesting specimen is a bamboo tobacco pipe made by the Russell River blacks, and was collected some years ago by Mr. Henry Tryon at Green Hills, Cairns district. Its length is 678 mm. (Q. M. Specimen No. QE 14/570.) An elaborately carved specimen, ornamented with a typical New Guinea design and marked as coming from Cape York, is really an introduced type which has been somewhat knocked about and mended again by means of some sort of cloth and gum cement. This specimen, No. QE 14/569, is 554 mm. in length.

[9] Cf. W. E. Roth, N.Q.E., Bull. 16.

[10] *Cymbium flammeum*, Bolt.

Charlotte Bay, the harpoon and the fixation of iron adzes by dovetailing. Wrestling,[11] which is also indulged in the Peninsula, may possibly be due to influences other than Papuan. The Queensland native probably had no idea of boiling water; hence it is difficult to explain the origin of the use of it in the North. The idea may have come to them from another source or it may have dawned upon them by chance;[12] on the other hand, it may be due to Papuan culture. These few remarks bring me then to the object of this paper, viz., to place on record a few interesting ornaments, several of which emanate from the Lankelly tribe.

There seems to be some doubt as to the exact locality traversed by the now extinct Lankelly tribe of the Cape York Peninsula, but Senior Sergeant James Whiteford, who about thirty years ago occupied the position of Protector of Aboriginals in the Coen district, kindly tells me that the so-called Lankelly tribe occupied the territory along the banks of the Lankelly River, a tributary of the Coen (Pennefather) River, from the coast 60 miles inland, and was a portion of one of the larger tribes which of late had split into various smaller groups. This tribe seems to have come into contact with Papuan influences rather more than the rest of their western neighbours, though not to the same extent as on the east coast, where Papuan interest was naturally far greater.[13]

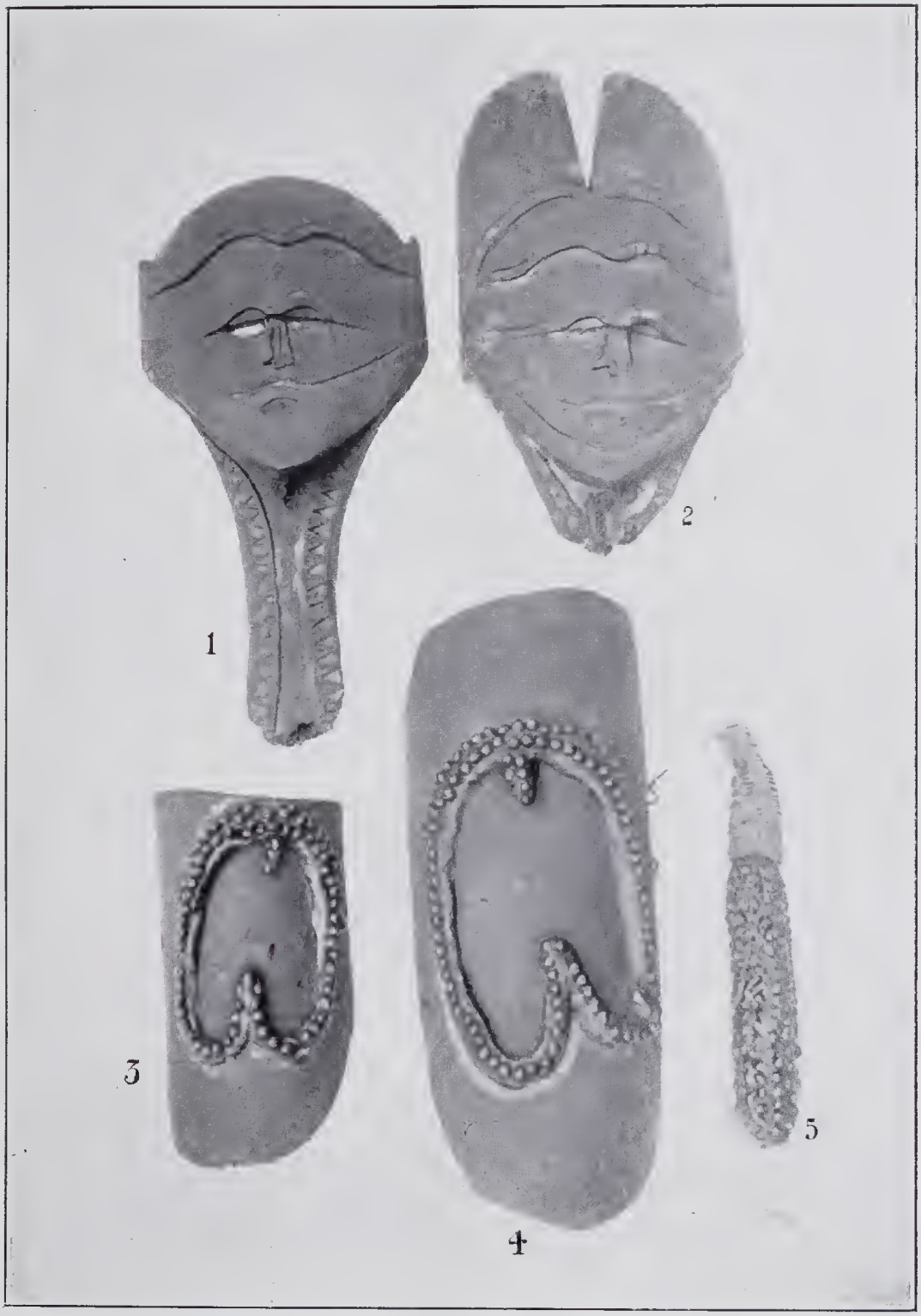
Dr. Haddon has kindly drawn my attention to the fact that many of the objects of presumed Papuan culture are nothing more or less than immigrants from Papua. This can hardly, however, be said of the various specimens shown in Plate VI. Figure 5 represents a pendant consisting of a native gum cylinder with the seeds of *Abrus precatorius*, Linné., embedded therein, which is suspended by a thin cord. The upper portion, however, is drawn to a point and so shaped to accommodate a small cap of native plait-work, the lower portion of which is made of pandanus and the upper portion of narrow strips of lawyer cane, total length 201 mm. (Q. M. Specimen No. QE 14/574.) A rather "natty" little necklace, consisting of gum cylinders with red seeds inserted and attached to twine, and made by a member of the Lankelly tribe (registered as QE 14/585), must have looked very pretty when intact (our specimen is very much damaged). This specimen is also of presumed Papuan culture.

Figures 3 and 4 represent a peculiar type of breast ornament bearing the native name of "Mona"; a longitudinally curved shape of stringybark ornamented with a wall of gum (the shape of which is best learnt by a study of the illustration) set with the seeds of *Abrus precatorius*, Linné.; the upper end of

[11] W. E. Roth, N.Q.E., Bull. 12.

[12] Cf. R. H. Mathews, Rock-holes used by the Aborigines for Warming Water, Journal and Proc. Roy. Soc. N.S.W., vol. 35, 1901, page 213.

[13] A number of specimens of various kinds (also in our collection), from the people of the Lankelly, go to show that they were subjected to considerable outside influence, not necessarily always Papuan.



EVIDENCES OF PAPUAN CULTURE IN NORTHERN QUEENSLAND.

Face page 12.

NATIONAL MUSEUM MELBOURNE

one of these[14] is fringed with human hair and is worn suspended by stout cord around the neck, so we are told.[15] This breast ornament is made in various sizes, and specimens in our collection (five in all) range from about 275 mm. down to 160 mm. in length.[16]

In 1893, Mr. Kendall Broadbent, who was then collecting for the Queensland Museum, obtained two curious breast ornaments bearing the native name of "Gubullaga," two specimens of which are shown in Figures 1 and 2. They are very much damaged, but the two together give a fair idea of what the specimen was like when intact. It consists of a crude human head worked in very soft wood, on a stem with a fairly regular engraved pattern on upper surface only. The face was provided with pearl-shell eyes, three of which have now fallen out. (Q. M. Specimens No. QE 14/580 and 581.)

It might not be out of place here at this particular stage to refer to the musical instruments which occur fairly plentifully in the Northern Territory, and are evidently of Malaysian influence. A specimen in the Queensland Museum, having been described as a "bird-call," measures 992 mm., is open at each end; one end is decorticated and gummed, the rest decorticated in lengths and the intervals are ornamented with rude incised patterns evidently made with a sharp instrument. This comes from Port Darwin, Northern Territory, Mr. E. Spalding being the donor (Q. M. Specimen No. E 14/461). I believe I am right in saying that it is hardly likely that such an implement would be used as a " bird-call," in view of the fact that most of the natives are able to mimic bird-sounds remarkably well without any mechanical assistance. These instruments are only used in rehearsals for corroborees, small groups of men (ten to twelve) taking part in these. The boomerang is clapped together, whilst a musical instrument of this kind is kept going all the time, the sound being like the booming noise of the male emu, and can be heard some miles distant on a still night.[17]

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[14] The other specimens were doubtless also provided with it originally—the hair in the others seems to have completely worn off.

[15] Is it possible by any chance that this curious " ornament " might have had some phallic significance, or been worn as a pubic cover? Our knowledge of these things is so incomplete that we are left in the dark as to its real import.

[16] Q.M. Specimens No. QE 14/575-579.

[17] On the authority of Mr. M. J. Colclough.

MALEKULA EFFIGY.

AS ILLUSTRATED BY A SPECIMEN IN THE QUEENSLAND MUSEUM COLLECTIONS.

By R. Hamlyn-Harris, D.Sc., Etc. (Director).

(Plates VII. and VIII.)

We have in our collection an effigy from Malekula, New Hebrides, and although specimens of this kind have been previously referred to, their growing scarcity warrants a few descriptive remarks to the accompanying plates. The south end of Malekula is inhabited by people materially different from other inhabitants of the island in a great many particulars, and who stand out as a peculiar race from any of the other natives of the New Hebrides group. Some of their remarkable characteristics are particularly noticeable in their dealing with their friends after death. Mr. Douglas Rannie, who spent some years in the islands, has been good enough to supply me with the following information:—"After death the cranium and as many of the bones as can conveniently be gathered are collected and put together in the form of an effigy resembling the human form. The body is composed of a framework made from bones, sticks, grass, and fibre all inlaid with clay, which is ornamented and painted with various coloured pigments, the whole being surmounted by the skull of the deceased, on which is replaced the original scalp which has previously been removed for the purpose. These effigies are then placed in upright positions around the walls of the council chamber known as the 'Amil' house. Arrows are shot into the eye-sockets, presumably to deprive the dead from all knowledge of the doings or actions of posterity. In many instances the most prized possessions of the deceased during life are placed within grasp of the effigy." Now, although these remarks may hold good in the main, our Queensland Museum specimen is, I think, not prepared quite in the same way, since I cannot discover the presence of human bones in the framework, with the exception of the typically elongate head, but is apparently simply put together with sticks, grass, and fibre, and matted together with clay. Individual specimens show considerable minor differences. Some have feet; ours has the appearance of walking on stilts, being minus feet; in addition, each knee is decorated with a small head. The Melbourne Museum specimens carry nothing in their hands—in fact, they do not possess them, they only appear to have stumps coming to a point; and whereas the latter possess most elaborate shoulders drawn to a great height over the head or mask with two faces on each shoulder one above the other, our specimen contains only one face on each shoulder and is not unduly prolonged.

MALEKULA EFFIGY.

Face page 14.

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HEAD AND SHOULDERS OF MALEKULA EFFIGY.

Face page 15.

These effigies seem to be entirely restricted to people of importance, and doubtless, as previously stated, are chiefs' monuments,[1] the main object of which seems to be to perpetuate their memory.

The Queensland Museum effigy measures 5 feet 7 inches in length, with a chest measurement of 12¼ inches, and comes in all probability from South-West Bay. The right arm, which is 32¼ inches in length to the finger-tips, is slightly longer than the left arm, which only measures 30¼ inches, and each hand holds the jawbone of a favourite pig which has been sacrificed at his death, to enable the spirits to accompany their master through the shades of Lelemis, the spirit-world of these strange people.

The Queensland Museum is indebted to Mrs. Belbin, widow of Captain Belbin, "Boro Belle" schooner, one of the old Queensland labour vessels, for this interesting donation.

[1] Edge Partington, Plate 55, Ethnographical Album of the Pacific Islands, 3rd series, August, 1898.

SOME NOTES ON THE ASSASSINS' BATONS OF MALAITA.

By Douglas Rannie.

(Plate IX.)

Malaita, the largest and most densely populated island in the British Solomon Group, is one of the few localities at the present time left unexplored. Truly wonderful rewards await the scientific explorers who have the courage to face and overcome the difficulties lying in the path of those who would penetrate and probe the mysteries of these superstitious, wild, savage, and murderous people who dwell in the dark forests and mountain retreats of that beautiful island. A hundred miles long and twenty-five across, the island appears from the sea to be one vast forest, which, clothing the sides of a thousand hills, rises to far-off mountains. Through the jungle and glades of this dark forest there swarms a silent, desperate, cruel, and treacherous people. They kill and are killed, and feast on human flesh.

The bush people and mountaineers for generations past have waged a deadly feud with the coastal tribes, and stray trespassers on one another's territories, if surprised, meet with instant death, or, if captured alive, with a lingering death of torture. At stated times, by mutual consent, hostilities are suspended, and the sea-coast and country parties meet on neutral ground set apart as market places, where their women exchange and barter their varied produce and commodities, under the protection of armed guards of men from both sides.

The mixture of races on Malaita is also indicated by the variety of weapons and implements used in warfare and hunting, as well as the ornaments adopted for personal adornment. Whereas in most islands throughout the Solomon Group the natives confine themselves to particular kinds of lethal weapons, discarding all others, the Malaitans employ all the offensive weapons commonly used by all races inhabiting the neighbouring and adjacent islands, such as clubs and wooden swords of various designs, together with spears, bows and arrows, slings and stones, as well as daggers made from wood, shell, and bone. Many of their arrows and some of their spears, in workmanship, are peculiar to Malaita, but most of the other weapons have their counterpart in different islands. But the baton-shaped implements shown in the illustration of some of the specimens in the Queensland Museum are peculiar to the southern district of Malaita only. They are known by repute but never seen in any of the northern or central parts of the island, and they are quite unknown in any other part of the Pacific. On the south-east coast of the island they get the name of "Hau," and on the

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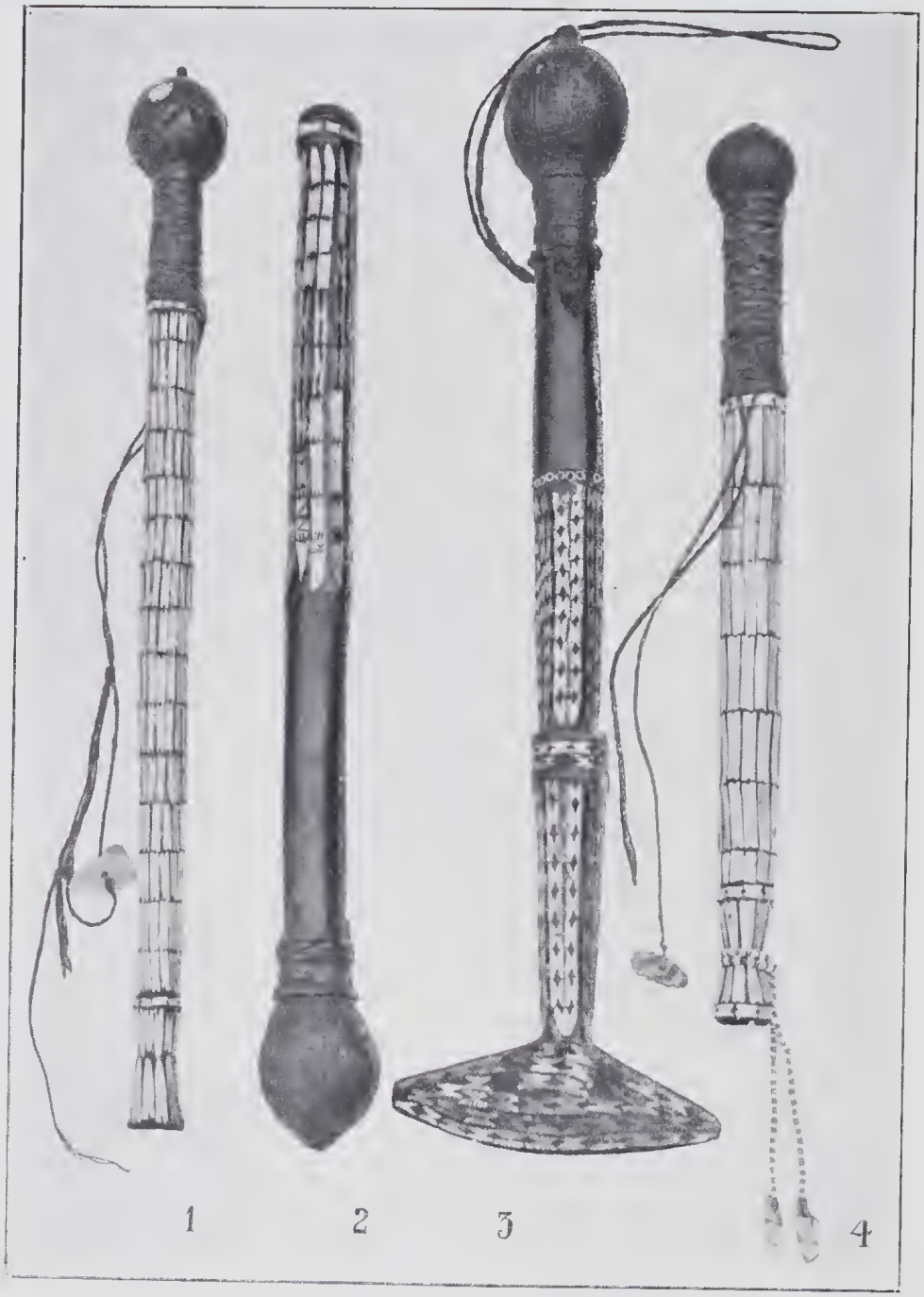

ASSASSINS' BATONS FROM MALAITA.

Face page 17.

south-west that of "Subey." Composed of hard, heavy wood, they are beautifully inlaid with a small fretwork of tastefully carved pieces of mother-of-pearl shell, artistically arranged and fixed in mosaic fashion to indelibly adhere to the stem of the baton with a pigment made from the fruit of the *Parinarium laurinum*, which hardens as firm as cement and takes a polish equal to the finest lacquer. The knob at the end is incased in a network plaited with fine strands from the outer skin of rattan cane. This cane network is frequently lined with pulverised iron pyrites to give the baton additional weight. Although formidable articles in appearance and quite serviceable for use should occasion arise, I have never heard of their being used as weapons of offence; they are simply worn as badges of distinction by the bravoes or hired assassins of Southern Malaita. And these murderous braggarts delight to swagger about in a crowd at one or other of their numerous festivals or dances each with his "hau" or "subey" suspended from his neck by a chain or necklace composed of native currency, to which are added the teeth and sometimes the jaws of their victims.

I was informed by the chief of Supina, Southern Malaita, that a young man is sometimes chosen who has never previously taken human life; he is directed to set forth and kill some particular individual; a "subey" is handed to him as a death warrant, and he goes forth to perform his mission well knowing that he dare not return to his own village to restore the "subey" or emblem of death to his chief without sufficient evidence of the accomplishment of his murderous errand, under the penalty of death to himself.

Specimen No.: Q.M. E 13/295. (Plate IX, Fig. 2.)

No. 1.—In length measures 392 mm. The lower half of the staff is studded with about 150 small fretwork pieces of mother-of-pearl shell inlaid and fixed with a strong preparation made from the nut of the *Parinarium laurinum*, A. Gray. In a similar manner a pearl-shell disc of the circumference of a shilling is let into the base. The upper part of the staff is polished hardwood, surmounted at the apex with a globular knob encased in woven grass work. In this instance the knob is not part and parcel of the baton, but is attached to the staff by the woven grass work, which passes through two holes perforated in the hardwood, and additionally strengthened by two rings of plaited cane, dyed red, bound round the juncture of the globular end with the staff.

Specimen No.: Q.M. E 13/300. (Plate IX, Fig. 3.)

No. 2.—Measures 426 mm., and somewhat resembles No. 1, but its base is shaped like a fishtail; and it is more elaborately inlaid with the fine mother-of-pearl fretwork. These small pieces of pearl-shell on this baton number about 360. At the termination of the shell ornamentation the staff is circled by a ring of the small discs of shell which compose the native currency, numbering 21.

Specimen No.: Q.M. E 14/455. (*Plate IX, Fig. 4.*)

No. 3.—Measures in length 342 mm. Three-quarters of the staff is inlaid with about 135 pieces of carved pearl-shell. The portion between the grass-woven globular end knob is covered with closely plaited canework dyed a bright red. To the red canework a cord is attached for suspending the baton around the owner's neck. At the end of the cord is a clasp for securing it, cut from a nautilus shell. From two beadwork strings at the base hang human teeth, trophies of murderous tragedies.

No. 4.—Q.M. Specimen E 13/296. Length 103 mm. (*Plate IX, Fig. 1.*)

No. 5.—Q.M. Specimen E 13/297. Length 355 mm. (*Not figured.*)

No. 6.—Q.M. Specimen E 13/388. Length 388 mm. (*Not figured.*)

All resemble No. 3 in ornamentation, but, unlike 1, 2, and 3, they are all made from one piece of wood each, having no separate globular top; and in these three specimens the wooden top is plain, with the exception of No. 4, which has two mother-of-pearl stars embedded in the wood. None of them are incased in woven grass work, such as in Nos. 1, 2, and 3, but each is sheathed from the terminus of the pearl-shell ornamentation to the bare knob with red dyed cane plaiting, from which hang the neck cords with shell-clasps.

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A SUPPOSITITIOUS "TOP-BOOT."

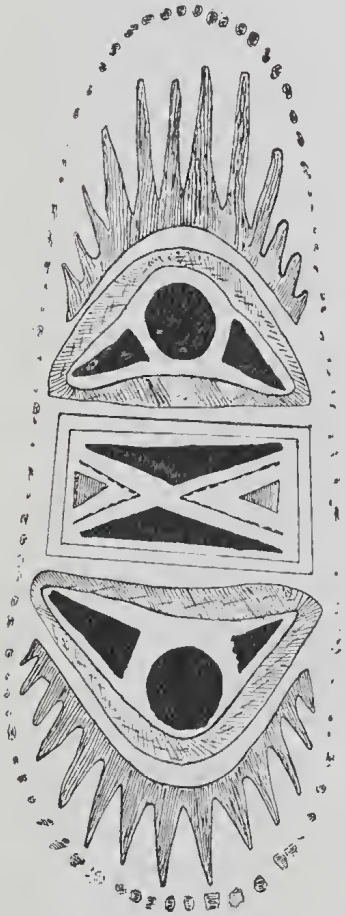
Face page 19.

A SUPPOSITITIOUS TOP-BOOT,
IN THE QUEENSLAND MUSEUM COLLECTIONS.

By R. Hamlyn-Harris, D.Sc., Etc. (Director).

(Plate X and One Text-figure.)

There is in the collections of the Queensland Museum an ethnological specimen of great interest but of doubtful locality and significance. The object represents what may be designated as a "top-boot" made of cocoanut fibre ornamented with distinct designs in white, red, and black, yellow being also introduced, and labelled as such I find it entered in one of the registers—No. 6082. I am not in the position, however, to either contradict or confirm the statement, since though it may have the shape of a "top-boot" it is hardly to be supposed that it would be used in that way, especially as the upper portion is sewn to the sole so that communication between the upper and lower portions is entirely impossible.



Text-fig. 1.—The pattern on the sole of the "Top-Boot"; designed in black, red, brown, and yellow ($\frac{2}{3}$ reduction).

In order to make these few remarks more intelligible, the specimen has been reproduced on Plate X, of which the front view is given. The ornamentation on the back is very similar, and as there is an interesting design on the sole of the object, a figure of this (Text-figure No. 1) is also reproduced. The question naturally arises as to what can be its use, and on this point I am quite unable to throw any light. Mr. Douglas Rannie has suggested the possibility of such a boot being used for the Malekula effigies, and, since the lower limbs of these are usually mere stumps, it does not require a very extensive amount of imagination to attribute to these "top-boots" such a function. The effigies would doubtless find them useful. Somehow this explanation does not meet with favour, and even if such were the case it has yet to be proved that this specimen came from Malekula or the neighbouring islands. It is to be earnestly hoped that, if any information concerning this could be obtained, ethnologists will not fail to communicate with the author.

AN INTERESTING RELIC OF THE EARLY DAYS OF AUSTRALIAN EXPLORATION.

By R. Hamlyn-Harris, D.Sc., Etc. (Director).

(Illustrated in Plate XI.)

The exceptional interest attaching to the "Investigator" tree from Sweers Island,[1] Gulf of Carpentaria, demands some slight notice, in view of the fact that the greater portion of the tree has now been safely housed in one of the larger cases in the Aboriginal Court of the Queensland Museum. It would appear that the first date and name to be marked upon this tree was "1781 Lowy," the name of an early Dutch sailing vessel commanded by Captain Tasman, and secondly "1798," together with some Chinese[2] characters. It was usual at that early date for the Chinese to visit the Gulf waters for the purpose of collecting bêche-de-mer. Some years prior to the arrival of Captain Flinders on Wednesday, 17th November, 1802, a junk was wrecked on the island, and a number of the crew who were saved lived on the island until rescued by a Macassar prow. The mast of the junk was of teak-wood, and is still, I believe, to be seen on the beach.

Flinders marked this tree with the figures and word "1802 Investigator" prior to his leaving the island in December of the same year. The words "Robert Devine" (first lieutenant) are remarkably well cut.

In 1841 Captain Stokes[3] inscribed the name of his vessel, the "Beagle," upon the tree. The exact situation of the "Investigator" tree and the well close to it he obtained from Flinders' charts and diary.

In 1856 "Chimmo," a lieutenant and naval surveyor in command of the "Sandfly," cut his name on the tree. In his diary he speaks of finding a well which Flinders sank on Sweers Island and which he describes as being rather brackish. Further, the tree was found and marked by Captain Norman, of the

[1] Voyage of Terra Australis in H.M.S. "Investigator," commanded by Matthew Flinders, London, 1814, volume 2, page 135.

[2] Two Chinese spoons and some coins, from this very point where Captain Flinders saw the skeletons referred to in "The Voyage to Terra Australis," are now in the possession of Captain W. C. Thomson, s.s. "Wyandra," to whom I am indebted for much valuable assistance.

[3] Stokes, Discoveries in Australia, London, 1846, volume 2, page 270.

MUSEUM OF BRISBANE

"INVESTIGATOR" TREE IN NEW ABORIGINAL "ROOM" CASE. LOWER GALLERY.

NATIONAL MUSEUM MELBOURNE

ship "Victoria," who came from Melbourne in 1861 to meet the overland exploring party led by Burke and Wills. Our Queensland river is named after Captain Norman. In addition to these marks it was reported by Captain Jones in August, 1887, that the following names and dates were distinctly legible:—

NAE. NOV. 20th 1856.	THE EXPEDITION 1861.
W. J. HAY.	KARL TEATS 1856.
W. C. A. MILES.	L.H.S. 1861.
W. S. HOWELL.	W. SOLBY.
A.H.T. 1866.	D. CLOUSTON 1866.
J. MARTIN 1861.	A. AUSTIN 1861.

W. LANDSBOROUGH 1866.

The majority of these are now, in 1914, no longer visible. The tree was blown down in 1887 after a heavy gale, and soon after procured by Captain Jones for the Queensland Museum. Captain W. C. Thomson obtained the upper portion of this same historic relic from Pilot Jones (in the same year), and this is now in his private collection in Brisbane.

A NEW PHALANGER FROM NORTH QUEENSLAND.

By Heber A. Longman.

PSEUDOCHIRUS (HEMIBELIDEUS) CERVINUS, sp. nov.

Through the kindness of Mr. E. J. Holyoake, the Queensland Museum received in April last the skin of a female "fawn-coloured opossum" from the dense scrubs of the Atherton Tableland. This differed so markedly from all known forms that it was noted as new. The sender had recognised it as a very rare animal, stating that residents in the district for thirty years had heard of it from the blacks as being very uncommon and only procurable in the one locality. Unfortunately, the skull of the first specimen was not available, but, in response to requests from the Director, Mr. Holyoake promised to do all in his power to obtain another. To his efforts we are now indebted for a second skin (male) and an accompanying skull.

This very handsome Phalanger belongs to the subgenus *Hemibelideus,* which Collett rightly established in 1884 for the reception of *Pseudochirus lemuroides* with its comparatively short and broad skull.[1] Externally, however, its general appearance is so very distinct from Collett's species that cranial divergencies were also anticipated. Although these to be noted are by no means remarkable, it must be remembered that Oldfield Thomas[2] and Collett have placed on record the striking cranial affinities of some species of *Pseudochirus,* and also of *P. lemuroides* itself to the so-called Flying Phalanger, *Petaurus volans,* Kerr.

Form and dimensions similar to *P. lemuroides,* but the tail is equal in length to both head and body. Fur long, fine, soft and silky, nowhere adpressed, also long on the limbs and tail and even sparsely covering the dorsal surface of the claws. Colour uniform fawn above, below and on limbs, with the exception of the lumbar region, which is decidedly lighter, and the head; the distal portions of the hairs are glossy, but the proximal parts are silver gray. Head much lighter from the nuchal region forward; throat and chest scarcely varying from dorsal colouring. Ears almost naked inside, long-haired on the posterior part of their hinder surfaces; 20 mm. in length but not projecting much beyond the long fur.

[1] Collett, P.Z.S., 1884, p. 385. Collett, Zool. Jahrb., 1887, p. 923.
[2] Oldfield Thomas, B.M.C. Marsupialia, 1888, p. 185.

Tail longer than those of our specimens of *lemuroides,* evenly clothed with fur like a *Trichosurus*; portion naked underneath not so long as head; extreme tip naked all round.

The skin of the male specimen is not in good condition, but no definite colour differences are manifested by the sexes.

Skull and teeth closely resembling our series of *P. lemuroides.* Across the zygomatic processes the new species is relatively wider, and the nasals reach almost to the base of the first incisor. The naso-premaxillary suture exceeds that of the naso-maxillary. The lower jaw has on each side a distinct foramen in the masseteric fossa, a feature which, although inconstant in many of the *Phalangeridæ,* is apparently not found in *P. lemuroides.* Taking into consideration the points above noted, *P. cervinus* otherwise presents almost a facsimile of the skull and lower jaw of *P. lemuroides* as figured by Collett (loc. cit.).

Skull dimensions: (♂) Length 55 mm.; width 38 mm.; max. length nasals 16 mm., greatest breadth 8 mm., least breadth 3·3; length of anterior palatal vacuities (foramina incisiva) 4 mm.

In this specimen the suture between the basi- and pre-sphenoid bones is obliterated by postero-lateral processes of the vomer which apparently unite with pterygoid extensions; it is thus impossible accurately to obtain the facial index.

Loc.: Atherton Tableland, North Queensland.

Type in Queensland Museum: Reg. No. J14/2016.

ON A GIANT TURTLE FROM THE QUEENSLAND LOWER CRETACEOUS.

By Heber A. Longman.

(Plates XII and XIII and Two Text-figures.)

It has been a matter of surprise to those interested in palæontology that the Queensland Cretaceous formations have as yet yielded comparatively few remains of the giant reptilian forms which characterised Mesozoic faunas. The paucity of described species is probably due to lack of systematic research, and, as time goes on and our inland areas are better known, further fossil remains, perchance providing novelties rivalling the grotesque monsters of other lands, may be exhumed. A collection of fossils found on Sylvania Station, twenty miles west of Hughenden, gives encouragement to this hope, for these, although fragmentary, point indubitably to the presence of a giant Chelonian whose proportions are not dwarfed by the monster turtles of the London Clay or the American *Archelon* and *Protostega*.

The Queensland Museum is indebted to Mr. F. L. Berney, whose efforts in the cause of Australian science have already made his name familiar with local workers, for the deposition of these valuable remains in our national collections.

Just as in America the first described fragments of the giant *Archelon* and other *Protostegida* were supplemented by fairly complete skeletons, so we hope that our Queensland formations will later afford examples which will permit of comprehensive reconstruction and probably shed light on the phylogeny of the group. Although the outlines of the Australian Cretaceous sea are not as yet comprehensively defined, there is considerable evidence for an eastern land barrier connecting Australia with Asiatic regions and also stretching further south. If this barrier were continuous with northern continental regions, associations with our Cretaceous fauna should be more frequent on the western side (where breaks in the land barrier are suggested) than on the Pacific border. W. S. Dun [1] has shown that the marine fauna of Western Australia exhibits "marked affinities (and identity) with European and Asiatic species," but he notes a "lack of community" between the Mesozoic fauna of the west and that of the vast eastern beds (from whence our fossils come). He speaks of these last as a "Cretaceous Mediterranean," and refers to the "numerous species peculiar to the region and many endemic genera among the Mollusca." But this endemic character of our Cretaceous molluscan fauna can scarcely be projected into the accompanying larger vertebrates such as the immense Ichthyosaurians and Plesiosaurians. Similarly we dare not suggest merely a local range for this new giant Chelonian, especially when we remember how cosmopolitan is the habitat of several far smaller turtles at the present day. Thus it is by no means

[1] W. S. Dun, Handbook of Australia, B.A.A.S., 1914, p. 296.

improbable that other remains related to our fossils may ultimately be found in synchronous deposits elsewhere.

Zittel has pointed out that of the imperfectly known Cretaceous and Tertiary marine turtles which have been placed by some authors in independent families, numerous examples are perhaps most nearly related to the *Chelonidæ*.[2] Whilst the plastral plate to be described cannot be associated with any of the forms treated in literature available to the writer, the bones of the shoulder-girdle and limb-fragments point irresistibly to Chelonoid affinities. Until further remains are forthcoming it would be unwise to state an arbitrary systematic position, but temporarily the giant Queensland Turtle may be placed in Gray's family *Chelonidæ* of Baur's superfamily *Chelonoidea*, under the name of *Cratochelone berneyi*. The generic name is in obvious contradistinction to the small *Notochelone costata*, Owen,[3] from the same district, supplementary portions of which were described by De Vis.[4] Here it may be appropriately mentioned that Ramsay noted[5] "a portion of a pelvis," received from Lord Howe Island, on which no generic conclusions could be based, but which he stated "will prove to belong to a large sea-turtle."

CRATOCHELONE BERNEYI, gen. et spec. nov.

(Reg. No. Q.M. F.14/550.)

The fossils consist of four portions of the left shoulder-girdle, with the proximal ends of the left humerus, radius and ulna, and when received these were largely superimposed and the whole crushed down on an incomplete plastral plate, which had also sustained a transverse fracture. All the bones were heavily invested with a fine hard "dirty stone-coloured" matrix, and great difficulty was experienced in exposing the natural contours. Some of the associated cavities were infilled with calcite. Specimens of the common bivalve shell, *Aucella hughendenensis*, Eth. fils, were found in the matrix. A cranial fragment of *Portheus australis*, A. S. Woodward, an Ichthyodectoid fish, also forwarded, is noted by Mr. Berney as found lying with above.

Left shoulder-girdle (Fig. 1, upper view).—The contours of these remains are decidedly Chelonoid. Although the bars are broken off close to the body, the basal curves and the angle between the scapular and its "acromial process" or the precoracoid may be gauged as closely corresponding to those in *Chelone mydas*. Now that the matrix has been removed, the scapular facet of the coracoid may be approximated to its fellow, and here, too, the angles at the base of the coracoid and precoracoid bars and the inward and backward sweep of the former have striking affinities with those in the green turtle. In the fossil the contributing curve with the angle of the precoracoid and its base is more open. On

[2] Zittel, Text-book of Palæontology, vol. ii., p. 198 (Macmillan).

[3] Owen, Quart. Journ. Geol. Soc., 1882, xxxviii., p. 178.

[4] De Vis, Ann. Queensland Museum, No. 10, 1911, p. 3.

[5] Ramsay, Proc. Lin. Soc. N.S.W., 1882, vii., pl. i., p. 86.

taking these bones and noting the bulk of material at the symphysis of the coracoid with the scapulo-precoraeoid, it will be seen that in *Chelone mydas* there is relatively a far greater depth of bone behind the glenoid cavity.

Two fragments of the bars themselves were found, one being the distal end of the scapular and the other the corresponding portion of the precoraeoid. In their relative proportions these present differences from their living associates.

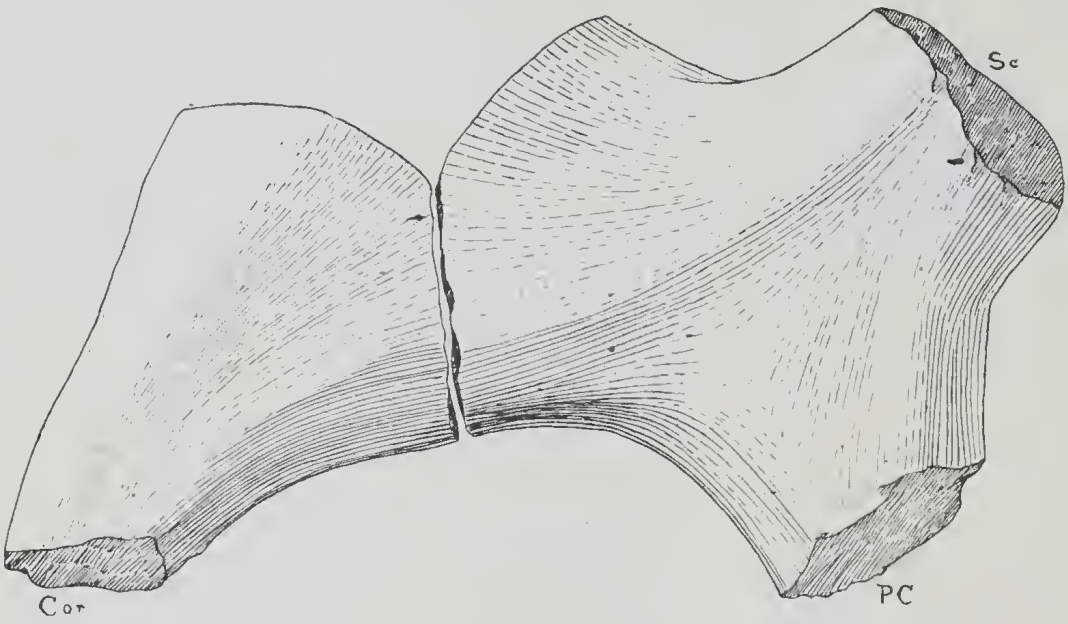


Fig. 1.—*Cratochelone berneyi*. Left Shoulder Girdle; upper view of remains. *Cor*, coracoid; *PC*, precoracoid; *Sc*, scapular.

Del. C. M. Rossiter.

The seapular fragment has a maximum width of 100 mm. (contours abraded), is 38 mm. thick, and the length to the fracture is 200 mm. Compared with that of *C. mydas* it is relatively much thieker. These proportions are reversed in the termination of the precoracoid, which is relatively wider and thinner.

Humerus.—The portion preserved eonsists of the proximal end of a left humerus with the head and mesial process or ulnar crest. The subhemispherical head is set somewhat obliquely; the portion overhanging the intertubercular fossa is considerably in excess of that on the outer side and the neck is here marked by a sharply defined concavity immediately below the artieular surfaee. As in *Chelone mydas*, the head is greatly expanded transversely in eorrespondenee with the glenoid faeets of the coracoid and scapulo-precoracoid. Although the head itself is relatively less deep, the proportions of the whole bone are here very similar to those of the green turtle, the maximum diameter of the head being three-quarters of the maximum diameter of the bone (*i.e.*, surface of head to outer margin), the comparative shallowness of the head being made up by the width of the shaft at the base of the mesial process. Unfortunately, the extreme

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CRATOCHELONE BERNEYI Longman.
Ectal view of Plastral Plate. ½ Nat. Size.

Face page 27.

end is missing from the mesial process, but the curves shown evidence a more globose form than the obtusely pointed process seen in adult (but not in immature, where it is spherical) specimens in the Queensland Museum. On the outer or ulnar edge the portion preserved somewhat resembles *Lytoloma* (*Euclastes*) *gosseleti*, Dollo,[6] but the distal curves of the head do not suggest a very bulky lateral proeess adjoining. Just prior to the fracture, the terminating of the intertubercular fossa is marked by an ascending process (Fig. 2, B), which is the commencement of the tubercular mass adjoining the lateral or radial process.

In section the elliptical contours of this bone, the axes of which are set at right angles to each other, correspond closely to those of *C. mydas*. Dimensions: Max. diam. head, 150 mm.; max. diam. through head and shaft, 203 mm.

Various forms of Testudinate humeri have been studied and figured by Wieland,[7] who points out that they furnish as readily distinguishable and important characters as the carpus. Our bone is undoubtedly of the thalassic

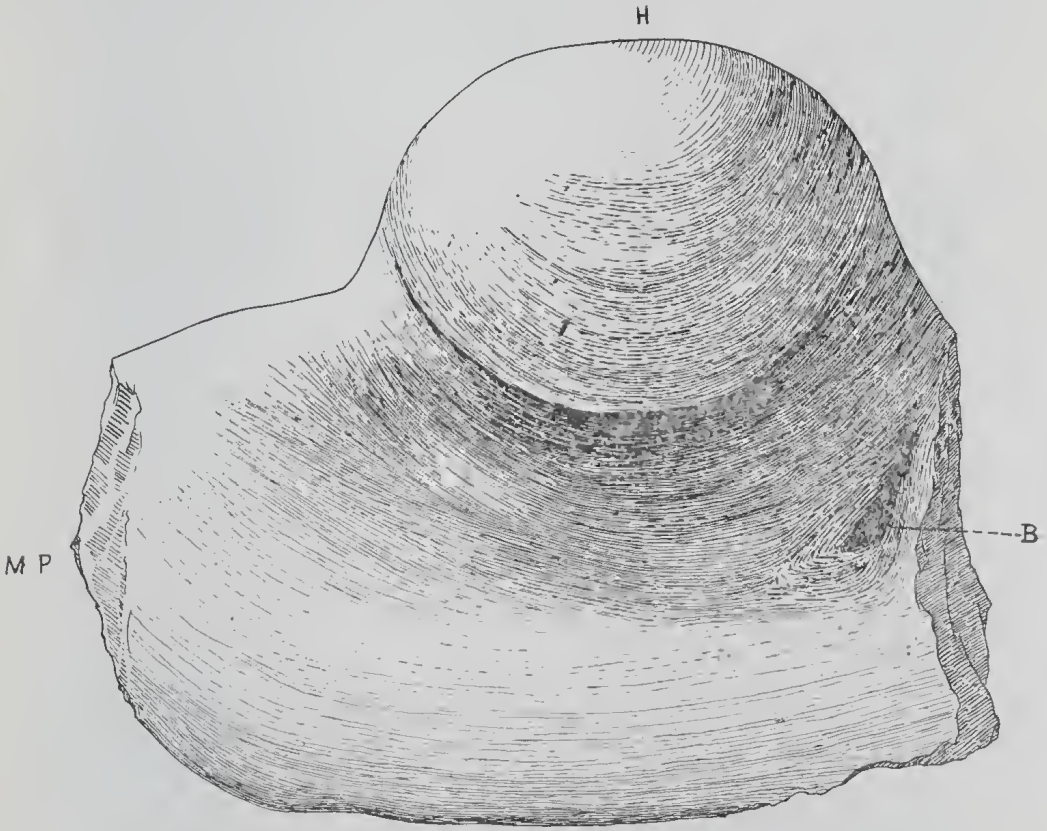

Fig. 2.—*Cratochelone berneyi*. Proximal end of Left Humerus: palmar view. *H*, head; *MP*, mesial process; *B*, base of tubercular mass.

Del. C. M. Rossiter.

[6] Dollo, Geol. Mag., June 1888, p. 266, fig. 2.

[7] Wieland, "Evolution of the Testudinate Humerus," Amer. Journ. Sci., 1900, p. 419.

type, as illustrated by *Atlantochelys mortonii,* Agassiz, although the absence of the radial process prohibits adequate comparison. Wieland also notes resemblance between *Atlantochelys* and *Desmatochelys lowii,* Williston.[8]

Radius and Ulna.—About 12 centimetres of the proximal ends only are preserved, and the ectal surfaces of these are incomplete. The proportions of these bones are considerably in excess of the relations borne to *C. mydas* by the other fragments; from this one may infer very powerful fore-limbs and flippers. The robustness of the front flippers in *Toxochelys* and *Archelon* has been demonstrated by Wieland,[9] who, after comparing the Cretaceous remains with those of present-day carnivorous and algaphagous turtles, says: "There is in the comparison just made the very strongest suggestion that *Protostega,* more distinctly than any marine turtle thus far known, hunted prey, which swam actively, and, bearing in mind other features, was perhaps even powerful."

When compared with corresponding portions of a large skeleton of *Chelone mydas,* representing an individual about 5 feet 9 inches, our fossil bones, except where noted, are a little more than twice the size. Following out these proportions, a turtle nearly 12 feet in length is suggested. Some specimens of the genus *Archelon,* described by Wieland, were about 13 feet in length.

Plastral Plate (Pl. XII and XIII).—The evolution of the dermal armours of Chelonians is one of the most perplexing yet fascinating problems to be elucidated by palæontologists, and the researches of such writers as Wieland and Hay in America are here of great value. The plastral plate is therefore the most interesting bone in the collection, and it is a matter for deep regret that the portion preserved is so incomplete. Of this fragment the greatest length is 51 centimetres and the greatest breadth 22 centimetres. The thickness is exceedingly variable, the maximum—33 millimetres—being in the centre on the left of the longer axis. From below this and to the right the plate shelves away and terminates in dactyloid processes. The broken ends of two dactyloid processes are exposed on the lower side of the plate to the right. (*See* Pl. XII.) It has been possible only partially to remove the matrix at this part, but the course of the processes is now apparent. The lowest digit is broken across 60 mm. from its base, but the upper, running apparently parallel to it at a distance of but 10 mm., extends for 130 mm. to its exposed fracture. During fossilisation this digit has evidently been broken, and the distal portion is partly superimposed not far from the base. The course of these processes is almost parallel to the long axis of the plate. On the ental side immediately above these broken digits is a furrow almost deep enough to appear through the plate, and this points to another dactyloid process more robust than the ones seen *in situ.* Within the margin of the anterior edge of the plate on the right are two other furrows, marking the bases of still stronger dactyloid processes, and the adjoining anterior border is chamfered away to a thin edge. (Pl. XIII.)

[8] Williston, Univ. Kansas Geol. Sur., vol. iv., Pal., 1898.

[9] Wieland, Mem. Carnegie Museum, vol. ii., No. 7, 1906, p. 289.

CRATOCHELONE BERNEYI Longman.
Ental view of Plastral Plate. $\frac{1}{3}$ Nat. Size.

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In the ectal view, shown in Pl. XII, the surface of the plate is approximately flat, but in the centre a deep depression, scar and transverse fracture mark a position where the limb-bones had been crushed in during the process of fossilisation. Except in the region of the furrows adjoining digital areas, the ental side is convex in section through the short axis. The exposed section on the left shows a number of diploic cavities.

The possibility of this plate being regarded as a left hyoplastron not suturally connected with its accompanying hypoplastron was at first considered. The development of plastral bones in existing *Chelonidæ* leaves at first large vacuities between these portions on each side. These may be noted in the plastra of newly hatched turtles, and the development is beautifully illustrated in W. K. Parker's monograph on the structure and development of the shoulder-girdle and sternum in the Vertebrata.[10] But the evident length of the completed bone in comparison with the width presents difficulties here, and the dimensions and contours also put out of court the probability of a united hyo- and hypoplastron. The writer therefore suggests that the plate may be the centre and greater part of the left side of a large entoplastron. Taking this view into consideration the bone may be compared to the entoplastron of *Archelon ischyros*, figured by Wieland.[11] The dactyloid processes do not show correspondence, but here we should expect diversity, and there is much variability in these even in the same species at the present day. Assuming that the left of the fragment approximates to the centre of an entoplastron, there is no sign of a nether tubercular process, though the incomplete state of the plate does not warrant a statement that it is absent. It may thus have no affinities with the peculiar T-shaped entoplastron characteristic of the *Protostegine*. Taking for granted that the centre of the bone is situated near to the left margin, an entoplastron about 4 feet in width is outlined. Following out our comparisons, we find that the breadth of our large *C. mydas* is well over 2 feet in the entoplastral region; but the contours of the anterior plastral bones here give scope at the side for the fore-limbs, and this cannot be imagined for the outwardly curved entoplastron of *Archelon*. But Wieland has pointed out that a greater breadth and "a quite orbicular form" is characteristic of Cretaceous turtles, and thus an extended entoplastron comes within the compass of our proportions. Probably such a plastral bone occupied a position less anterior than its homologue in modern turtles.

Remembering the faulty allocation of fragments by more than one authority in the past, the writer has some diffidence in thus definitely placing this bone, but he has taken the view that the flatness of the plate and the presence of such lateral and posterior dactyloid processes preclude the possibility of its being a nuchal.

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[10] W. K. Parker, Ray Society, 1868, pl. xii.

[11] Wieland, Annals Carnegie Museum, vol. iv., No. 1, 1906, p. 11.

REPTILES FROM QUEENSLAND AND THE NORTHERN TERRITORY.

By Heber A. Longman.

(Plates XIV and XV.)

SNAKES.

FURINA MULTIFASCIATA, sp. nov.

A single specimen received from Port Darwin, through the courtesy of Mr. G. F. Hill, Government Entomologist, is readily distinguished from previously described species by the larger number of ventrals and of white annuli and the absence of internasals. Unfortunately we are unable to ascertain whether this snake has the true cranial characteristics of other species of *Furina*, although the outward appearance suggests strong affinities. It may be that when further material is to hand and the cranium and dentition are available for description, a new genus will be needed to accommodate this species.

Head small. Rostral wider than deep, portion visible from above shorter than its distance from the frontal. The præfrontals are large and over two-thirds the length of the frontal, but, as in *Rhinhoplocephalus bicolor*, there are no internasals. Frontal a little longer than broad, much broader than the supra-ocular, as long as its distance from the end of the snout. Parietals as long as their distance from the end of the snout. Nasals prominent, entire. Eye small; one large præocular, one or two postoculars. Temporals 1 + 1, base of anterior between fifth and sixth labials. Six labials, third and fourth entering eye; first smallest, sixth largest. Anterior chin-shields larger than posterior, the latter being separated by an azygous shield. Scales in 15 rows; ventrals 284; subcaudals $\frac{20}{20}$ + 1; anal divided.

Shining black above. There are ninety narrow white annuli (enlarged laterally) on the body, the first being on the nuchal region; no white markings on head above, but the anterior labials and the infralabials are white. The ventral surfaee is irregularly spotted.

Length 365 mm.; tail 16 mm.

Type in Queensland Museum: Reg. No. Q.M. J 14/2019.

PSEUDECHIS PORPHYRIACUS, Shaw.

From Mr. C. G. Franklin, Hillview, Beaudesert district, the Museum has received a speeimen of the common black snake in which the anal plate shows no sign of division.

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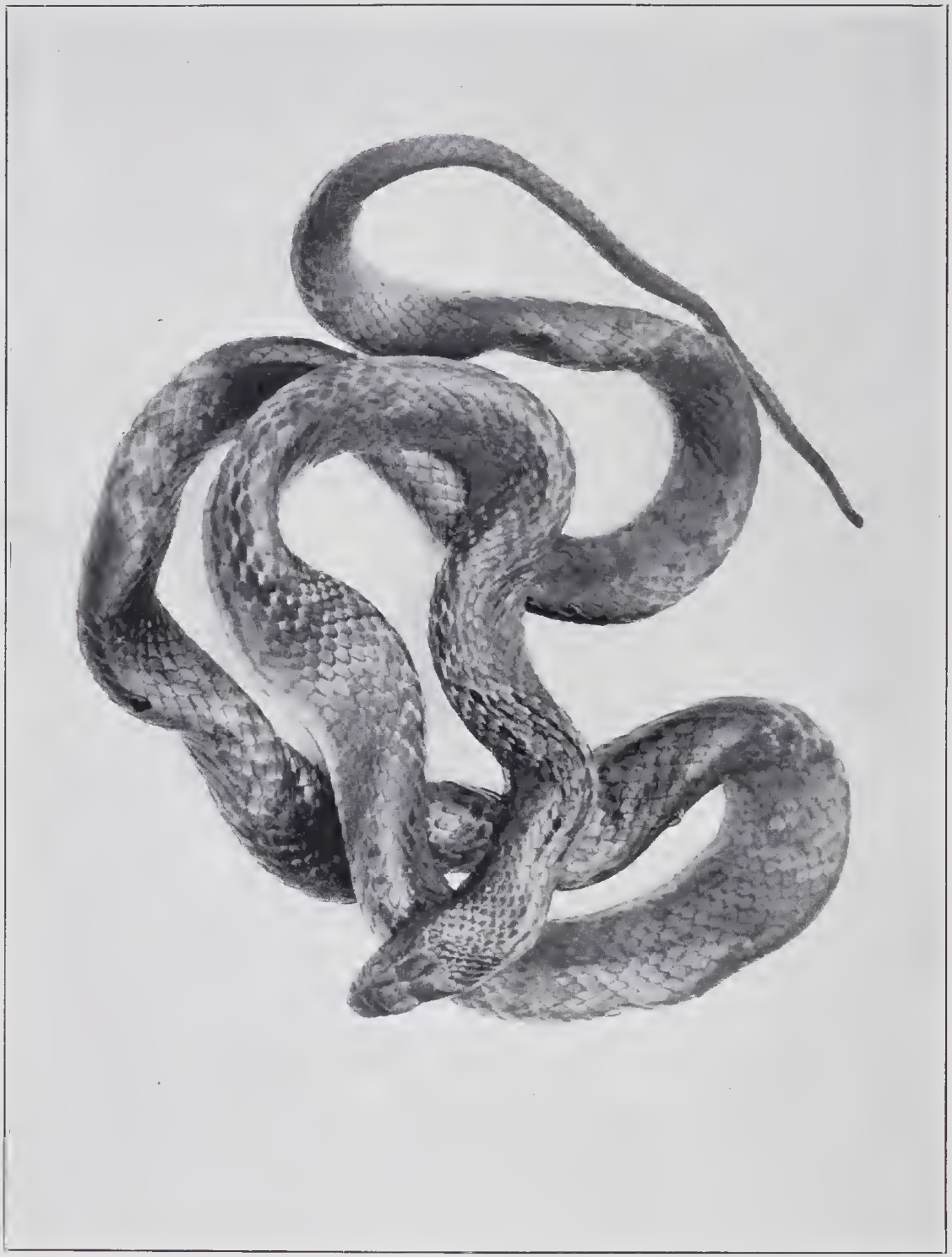

DIEMENIA CARINATA Longman.
(Spirit specimen.)

Face page 31.

DIEMENIA CARINATA, nov. sp.

(Plate XIV.)

This snake has the remarkable keeled ventral scales of *Hoplocephalus stephensii* and *bitorquatus,* but with this exeeption its affinities are with the genus *Diemenia.* The head is not unlike that of *Diemenia nuchalis,* and the subeaudals are in two rows. Some writers would possibly prefer to resurrect a generic name such as *Pseudonaja* to associate with this snake, yet it so greatly resembles certain speeies of *Diemenia* that, notwithstanding its keeled ventrals, it has been placed in that genus.

The diameter of the eye slightly exceeds its distance from the mouth. Rostral prominent, resembling that of *Diemenia nuchalis,* deeper than broad, the portion visible from above measuring nearly its distance from the frontal. Internasals shorter than the præfrontals. Frontal obtusely hexagonal, broadest anteriorly, wider than the supraoculars, shorter than the parietals, as long as its distanee from end of snout. Nasal entire, but notched below, in contact with single præocular. Two postoculars, both of which touch the anterior lateral edges of the parietal. Temporals small, 1 + 2. Labials six, first two in eontact with nasal, third and fourth entering eye, sixth largest. Mental small. Seven lower labials, first pair much larger than chin-shields, with which three labials are in eontact; posterior chin-shields small and separated by two seales.

Head small and tapering, not distinct from neck. Ventrals strongly angulated from the neck to the vent, probably being specialised for elimbing. This angulation is well shown on the photograph of spirit specimen (Plate XIV). Scales on body 17, 20 on neek, 15 near vent; dorsals somewhat imbrieated and smaller than laterals. Ventrals 220; subeaudals 55; the second only being single; anal divided. Total length 1,130 mm.; tail 157.

Head dark smoky brown, shining above, the dark eolouration being present below and continued on the first 15 gastrosteges, after which it is gradually lost in the prevailing whiteness of the ventral region. Body slaty brown above, darker anteriorly, barred by 15 irregular, burnished dark bands, the first of which is elongated and eonfined to the dorsal series. In addition to these conspicuous dark patches there are to be distinguished in the intervening spaces remains of numerous narrow dark bands, approximately one seale wide.

Locality: Cane Grass Station, *viâ* Charleville, Western Queensland. Vernacular name: "Tiger Snake."

Donor: Mr. J. Oswald Paynter.

Type in Queensland Museum: Reg. No. Q.M. J 14/1508.

AIPYSURUS EYDOUXII, Gray.

On the coast near Bundaberg, Mr. L. H. Maynard, honorary collector, secured a sea-snake which corresponds very closely with the description of the above species and differs markedly from the normal form of *A. lævis,* Lacép. On looking through our Queensland series of *A. lævis* (which is frequently met with on the coast), another specimen answering to *A. eydouxii* was found. Although somewhat variable in lepidosis and evidently closely allied, these snakes are readily separable, so far as our specimens are concerned, on the points noted by Boulenger.[1] This is apparently the first record of *A. eydouxii* for the Australian coast.

DIPSADOMORPHUS FUSCUS, Gray.

(Plate XV.)

In January last the Queensland Museum received a very handsome specimen of our Brown Tree Snake from Ormiston, the donor being Miss Morris. The snake was secured alive in a canary cage, it having made a meal of the rightful occupant during the night. The wires just permitted the snake to enter, but, as frequently happens, the postprandial diameter proved too great to permit of exit. The photograph shown (Plate XV) depicts the snake in a characteristically bellicose attitude.

ACALYPTOPHIS PERONII, D. and B.

The Queensland Museum possesses a solitary specimen of this rare snake, the locality of collection being Cape York.

LIASIS CHILDRENI, Gray.

This constricting snake has been looked upon as an inhabitant solely of the northern parts of Australia, its most southerly point in our records being Port Denison. Somewhat to our surprise, a specimen was received in July last which had been obtained in the Brisbane district, the donor stating that another snake, apparently of the same kind, had been previously killed near by. It is of course possible, though rather unlikely, that this snake had been artificially transported to South Queensland, and thus its extended habit is noted with diffidence. Our specimen agrees with those recorded by Lucas and Frost from the Central and Northern districts in having but thirty-eight rows of scales.[2]

LIZARDS.

DIPLODACTYLUS HILLII, sp. nov.

Head high, convex; snout pointed, almost as long as the distance between the anterior border of the eye and the small ear-opening; mental projecting beyond the rostral; canthus rostralis obtusely defined; loreal region slightly

[1] Boulenger, B. M. C. Snakes, iii, 1896, p. 304.

[2] Lucas and Frost, Horn Expedition, ii, p. 146.

DIPSADOMORPHUS FUSCUS Gray.
(From life.)

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concave. Rostral large, convex, wider than high, slightly emarginated above where in contact with the internasal. Nostril pierced between seven nasals, the anterior of which is the largest, the posterior being indistinguishable from the scales of the snout. As in *D. conspicillatus,* L. and F., only one upper distinct labial is present, the border being completed by about 26 small scales. The lower labial border is formed by the anterior units (about 30) of several oblique rows of granules which meet the gape; mental with a small median process posteriorly. Inferiorly, a few of the scales adjoining the mental are somewhat enlarged. Body moderate; upper surfaces covered with small granules, the median dorsal series not enlarged; abdominal scales smaller. Limbs slender, just meeting when adpressed. The digits are covered inferiorly with rounded tubercles, with two small oval plates at the apex (which is scarcely dilated); all clawed.

Tail (not reproduced) short, subglobose, being very convex above and slightly concave inferiorly; the middle and posterior surface above is covered with rounded or pentagonal convex scales, in the centre of each being a distinct tubercle; scales below flat and imbricate. No pores. At each side of the thickened base of the tail is a cluster of small conical scales.

Colour (spirits) greyish above, but far darker than *D. conspicillatus,* especially on the head; many of the scales are almost black, and these form an irregular reticulated pattern. The region of the canthus rostralis is lighter. Under surfaces whitish.

Dimensions: Total length 60 mm.; width of head 7·5 mm.; snout to ear-opening 10 mm.; snout to anal opening 44·5 mm.; fore-limb 13·5 mm.; hind-limb 16 mm.; tail 15·5 mm.; max. width of tail 9·5 mm.

Loc.: Port Darwin; donated by Mr. G. F. Hill.

Type in Queensland Museum: Reg. No. Q.M. J 14/1994.

Through the courtesy of Mr. C. Frost, we have had an opportunity of examining "a subtype" of *D. conspicillatus,* Lucas and Frost,[3] from Charlotte Waters, Central Australia. Although in colour and dorsal and caudal lepidosis these geckoes are very distinct, they have so much in common that *D. hillii* may be looked upon as the Northern coastal equivalent of the eremian species.

ŒDURA MARMORATA, Gray.

In a handsome specimen of this Northern gecko, forwarded from Port Darwin by Mr. G. F. Hill, the first infralabials are not in contact behind the mental, but are separated by an azygous scale or chin-shield.

[3] Lucas and Frost, Pro. Roy. Soc. Vic., n.s. ix, 1897, p. 55.

LYGOSOMA (SIAPHOS) ÆQUALE, Gray.

Some years ago this was doubtfully recorded for Queensland in our register, but there was some difficulty as to locality. Three specimens, however, were recently secured at Mount Tambourine by Mr. H. Hacker.

HEMISPHÆRIODON GERRARDII, Gray.

Living specimens of this large skink-lizard demonstrate the somewhat surprising fact that the caudal extremity is prehensile. The animal is able to circle its long tail around a suitable object and can hang thereby. This muscular flexibility is in marked contrast to the brittleness of the tails of most skinks. *Tiliqua longicauda,* De Vis,[4] is a synonym of this species. It should be noted that the colour characteristics as stated by Boulenger[5] are not constant and occasionally the throat markings are absent.

[4] De Vis, Pro. Lin. Soc. N. S. Wales, 1887, ii, p. 816.

[5] Boulenger, B. M. C. Lizards, iii, p. 148.

THE SCALES OF SOME AUSTRALIAN FISHES.

By T. D. A. Cockerell, University of Colorado.

Through the continued efforts of Dr. R. Hamlyn-Harris, I am now able to report on the scales of a number of additional Australian fishes, some of them of more than ordinary interest. As before, it appears that with rare exceptions the Southern species have scales closely resembling their Northern congeners, when such exist. Although scales are very variable in certain respects, their general characters are very constant, and persist while other features of the fishes change, as for example in the Chætodontidæ mentioned below. Dr. Hamlyn-Harris informs me that not all the species discussed in my former contribution to these Memoirs (December, 1913) are from Queensland. *Holocentrus angustifrons* comes from New Britain; while *Pempheris multiradiatus, Cheilodactylus nigricans,* and *Eupetrichthys angustipes* are Southern species.

ELOPIDÆ.

Megalops cyprinoides (Broussonet). Queensland. Scales 7-7½ mm. broad, 6-7 long; formed as in *Tarpon atlanticus,* with even more deeply scalloped basal margin; basal radii about 7; laterobasal angles rounded; nucleus above the middle; apical margin very thin, with very numerous evanescent radii, but the distinct apical radii arising from the nucleus are only one or two, extremely variable and irregular, often branching; there are also sometimes lateral radii, one on each side, which may branch, and there may be formed an approach to an irregular network, not well defined, but indicating a condition exhibited by some species of *Barbus.* The circuli in the region above the nucleus are broken into minute tubercles; those below the nucleus are more or less evidently beaded.

These scales are essentially as in *Tarpon,* differing by the small size and greater number of basal radii. The basal circuli are much more regular and less crowded than in *Synodus.*

DOROSOMATIDÆ.

Dorosoma come Richardson. Queensland. Scales 5½-6 mm. broad, 5-5½ long; base with a bow-like (with double curve) outline; circuli very fine, wholly transverse; apical field very thin, without circuli, no apical teeth; radii about 12, transverse, rarely branching. The radii are more or less bent or obtusely subangulate in the middle, but not at all interrupted. The median lateral circuli and radii reach the margin at right angles.

These scales are wholly of a Clupeid type. Those of *Konosirus thrissa* (Philippine Is., U. S. Nat. Mus., 56105) differ conspicuously, having a single rather wavy transverse radius crossing the scale a little above the middle, and mere rudiments of radii at the sides below the middle, especially near the laterobasal corners. Above the transverse radius, close to the edge of the area covered by circuli, is a coarse irregular malleation. The scales are larger than those of *Dorosoma come*, and much broader than long.

CLUPEIDÆ.

Sardinella moluccensis Bleeker. Darnley Island. Scales about 5½ mm. broad and 4½ long; middle of base more or less prominently but obtusely lobed; circuli and radii wholly transverse; radii five, entire in normal scales, the lowermost arched upward; apical field thin, free from circuli; apical margin produced into numerous long parallel-sided strap-like teeth. Readily known from *S. numeralis* (Tampa, Florida) by the conspicuously toothed apical margin.

Harengula castelnaui Ogilby. Queensland. Scales about 7 mm. broad and 6½ long; basal outline gently convex; circuli and radii wholly transverse; radii four, or sometimes three, usually all entire; apical margin not dentate. Known from *H. perforata* by the absence of perforations in the apical area, and the somewhat smaller number of radii.

Amblygaster neopilchardus Steindachner. Queensland. Scales about 7½ mm. long and 7 broad, oblique, so that one of the laterobasal angles is very obtuse; basal margin almost straight or feebly lobed; circuli and radii (except the evanescent apical ones) all transverse; radii 6 or 7, all but the uppermost broadly interrupted in middle, the lower ones with the inner half strongly oblique; the thin apical field with numerous fine and weak parallel radial lines, all running upwards, and causing the margin to be subdentate.

Stolephorus robustus Ogilby. Queensland. Scales about 4½ mm. broad and a little over 3 long; basal margin very obtusely angulate in middle; apical field thin as usual, the margin coarsely and irregularly dentate, or rather crenulate, the teeth being short and obtuse; radii and circuli all transverse, the radii two or three, entire, the lowermost angulate in middle. There are frequently rudiments of radii. Compared with *S. brownii* (Cape Sable Creek) these scales are smaller, and much broader in proportion to their length, while the radii of *S. brownii* are much more developed, including vertical basal ones, and angular or zigzag ones in the apical field. *S. brownii* also has a double system of circuli, though the basal ones are much more transverse than those of *Engraulis antipodum*. According to the scales, *antipodum* and *brownii* should be congeneric, while *S. robustus* stands apart.

Potamalosa novæ-hollandiæ Valenciennes. New South Wales. Scales about 8-9 mm. broad and 6½-7 long; basal margin gently convex, not lobed; circuli very fine, covering not much more than half of scale, curving upward at sides, reaching the margin very obliquely; apical field without distinct sculpture, the margin not dentate; a strong entire transverse radius crosses near the middle of the scale; basally and sublaterally are many (16 or more) more or less incomplete radii, directed toward the nucleus. In young scales the circuli appear more transverse.

Hyperlophus sprattellides Ogilby. Queensland. Scales less than 5 mm. broad, broader than long or about as broad as long; basal margin usually extended in middle; circuli transverse, covering little more than half of scale; a transverse radius (usually more or less arched upward) crosses the middle of the scale; and there are from none to four incomplete basal radii; apical field delicately radiate and conspicuously dentate.

ENGRAULIDIDÆ.

Engraulis antipodum Günther. Queensland. Scales about 3½ mm. broad and nearly or quite as long; basal margin more or less convex in middle and concave sublaterally; apical field thin and without circuli, the margin not at all dentate; region about and just above middle of scale with very fine transverse circuli, like those of the clupeids; region below the middle with fine but much more widely spaced circuli, which curve upwards at the sides, as in non-clupeid fishes, the two systems of circuli meeting at the sides, but abruptly discontinuous; radii very irregular, largely bent or zigzag, apical as well as lateral and basal, but few, mostly pointing to the middle of the scale, the apical ones sometimes meeting and forming a broad V.

CHIROCENTRIDÆ.

Chirocentrus dorab Forskal. Queensland. The scales sent show fine transverse circuli, and no radii whatever. The apical field is without sculpture, and its margin entire. The area covered with circuli extends in the middle as a rounded lobe into the apical field. All this is very different from *C. dorab* from the Philippine Is., which has well-developed radii, as well as different circuli. It would seem probable that the fishes belong to different species. In neither case did I see the fish itself.

Dr. Max Ellis has in preparation a paper on Clupeoid scales, which will include a discussion of various Australian species, and will go into a number of matters not touched upon here, where I give only what is necessary to

complete this report. The following key separates the Clupeoid scales now described:—

No radii; apical margin entire .. .. *Chirocentrus dorab.*
Radii present .. .. 1.
Basal field with vertical radii .. .. 2.
Basal field without vertical radii .. .. 3.
2. Apical field with distinct transverse or V-like radii .. .. *Engraulis antipodum.*
Apical field without such radii .. .. *Potamalosa novæ-hollandiæ.*
3. Transverse radii, except the uppermost regularly interrupted in middle .. .. .. *Amblygaster neopilchardus.*
Transverse radii not or rarely interrupted .. .. .. 4.
4. Transverse radii 3 or 4, rarely fewer .. .. 5.
Transverse radii more numerous .. .. 6.
5. Apical margin coarsely crenulate .. .. *Stolephorus robustus.*
Apical margin not crenulate .. .. *Harengula castelnaui.*
6. Apical margin with long strap-like teeth .. .. .. *Sardinella moluccensis.*
Apical margin without teeth .. .. *Dorosoma come.*

ATHERINIDÆ.

Rhadinocentrus ornatus Regan. Queensland; Moreton Bay. Scales transversely oval or oblong, about 2½ mm. broad and 1½ long; completely cycloid; corners rounded, the laterobasal slightly angular; circuli fine, all round scale; basal radii numerous (about 12). The scales resemble those of the Pœciliidæ. Those studied are latinucleate, with a large sculptureless nuclear field.

Rhombatractus fitzroiensis Castelnau. Queensland; Brisbane, fresh water. Scales about 2½ mm. broad and 1¾ long; completely cycloid; laterobasal corners rectangular; nuclear region a short distance above the middle; about ten basal radii; circuli fine and regular, except in the apical field, where they are mainly broken into small pustuliform markings; slight suggestions of apical radii on some scales.

R. maccullochi Ogilby. Queensland. Scales almost exactly as in the other species, except that the circuli are practically absent in the apical field, not represented by pustuliform markings.

These scales resemble those of *Menidia menidia*, except that they are much smaller, the laterobasal angles are more distinct, and the lateral circuli are much denser.

MUGILIDÆ.

Mugil cephalus dobula Günther. Queensland. Scales subquadrate, about 10 mm. broad and 11 long; basal radii about 8 to 12, subparallel, not crowded about middle of scale; laterobasal corners evident; ctenoid area very well developed, the elements contiguous throughout; region above the nucleus covered with fine labyrinthiform markings. The basal circuli are extremely fine and dense; much more so than in *M. curema*. The shape of the scales is entirely different from that of *M. curema*.

POLYNEMIDÆ.

Polydactylus multiradiatus Günther. Queensland; Thursday Island. Scales quadrate, about 3 mm. broad and long, the practically straight sides gently converging toward the apical region; basal radii 4 to 6, irregularly placed, the midmost one ending in a deep notch or sinus in the basal margin; nucleus far above the middle; ctenoid area very well developed, forming sharp teeth on the margin, and about six rows of hexagonal elements below this. Compared with the scales of *P. octonemus*, these are much smaller, but entirely of the same type, with the same characteristic basal notch. On minute comparison, one rather important difference is noted: the subapical elements of the ctenoid area are shorter, especially several rows from the margin, in *P. multiradiatus* than in *P. octonemus*.

MULLIDÆ.

Upeneus malabaricus Cuv. & Val. Darnley Island. Scales very large, more or less semicircular, about 15 mm. broad and 11 to 12 long; circuli excessively fine and dense; basal radii 5 or 6; basal margin scalloped; nucleus far above middle; ctenoid area very well developed; many of the marginal teeth bifid.

This nearly agrees in structure with the scales of *U. dentatus*, but the bifid apical teeth are distinctive; and whereas in *U. dentatus* there are very fine circuli running transversely just below the abruptly limited ctenoid area, in *U. malabaricus* this region is occupied by a minutely tubercular or subreticulate pattern. The fine lines below the ctenoid area in *U. dentatus*, though referred to as circuli, and certainly part of that system, are much denser and finer than the true or typical circuli, which they meet at right angles laterally, while below they are broken up into minute vermiform lines, which partly anastomose with the circuli, but mainly occupy the spaces between them. The minute pattern occupying the same region in *U. malabaricus* is also derived from the circuli, but it is very different in appearance.

In *Pseudupeneus multifasciatus* from Honolulu (Jordan and Evermann; U.S. Nat. Mus.), the scales are entirely of the same general type, with excessively fine circuli, and five or six basal radii. The area below the ctenoid patch has five transverse lines (as in *U. dentatus*) on the middle third only, the lateral thirds having fine circuli running vertically (at right angles to the transverse lines) up to the ctenoid patch. In addition, this region, as well as the lowermost part of the ctenoid patch, shows rather large round pustuliform markings. This last feature is apparently indicated by hyaline spots in *U. malabaricus*.

CARANGIDÆ.

Caranx speciosus Forskal. Queensland. Scales circular or more or less oblong, 2 to rather over 3 mm. diameter; margin simple; no radii; normal circuli

all around, except that the extreme margin, especially at sides of apex, is hyaline and without sculpture; basal circuli conspicuously denser than apical or lateral.

These scales do not differ materially from those of *C. hippos*.

STROMATEIDÆ (including NOMEIDÆ).

Psenes whiteleggii Waite. Queensland. Scales very variable, the largest scarcely 1½ mm. broad, broader than long; but others, probably from the caudal region, smaller, and longer than broad; margin simple; three or fewer basal radii; basal margin variably but usually strongly lobed; circuli normal, widely spaced.

Gobiomorus gronovii has scales of the same general type, but without radii. The scales of *Poronotus triacanthus* are much larger than those of *Psenes*, but otherwise very similar, though with much denser circuli. The lateral circuli are often distinctly angular, and the same feature may be seen in some scales of *Psenes*.

PEMPHERIDÆ.

Pempheris compressus Shaw. Port Jackson. Scales (from different parts of the fish, presumably) differ greatly in size, the largest are nearly 4½ mm. broad and fully 3¾ long; a strong arched ridge runs across the scale just above the nucleus, separating the larger apical field, which is without circuli or other distinct sculpture, except the marginal ctenoid area; marginal teeth long and sharp, on all the scales examined; submarginal ctenoid elements broader than long; sides of apical field variably constricted (concave) just above the ends of the transverse ridge; part of scale below the ridge covered with normal circuli; basal radii many, but feeble, being folds rather than true radii, arranged in a fan-like manner (except in latinucleate scales); basal margin of larger scales straight, weakly crenulate, but some of the smaller scales have three lobes, the median one very large, separated from the others by deep sinuses.

Parapriacanthus elongatus McCulloch. Bass Straits. Scales about 3 mm. broad and 2 long; divided into two parts more or less as in *Pempheris compressus*, but wholly cycloid, or with the apical margin thrown into one or two broad dentiform prominences, without any cycloid patch; transverse ridge straighter and weaker than in *P. compressus*; apical half of scale without circuli, basal half with strong normal circuli; at the beginning of the basal half the scale suddenly widens, making an angle with the vertical sides of the apical half; no distinct basal radii or lobes, but there are very indistinct traces of radial folds.

These scales are very remarkable; those of *P. compressus* are quite unlike those of the species of *Pempheris* previously seen (Mem. Queensl. Mus., Dec. 1913, p. 54). In the presence of a distinct ctenoid patch, *P. compressus* resembles *Leptobrama mülleri*, but the submarginal elements in that fish are very different,

being longer than broad. There is an evident relationship between *P. compressus* and *Parapriacanthus elongatus*, though they differ greatly in detail. Ogilby (Mem. Queensl. Mus., 1913, p. 66) refers *Pempheris multiradiatus* to *Liopempheris*, a genus differing from true *Pempheris* in having both eyeloid and etenoid scales, the latter with large marginal teeth, but no ctenoid patch. *Catalufa* Snyder includes *P. compressus*, and considering the character of the scales, described above, the genus is perhaps valid. The species from the Red Sea, the scales of which I described in the place cited, is presumably not *P. otaitensis*, as provisionally determined, but rather *P. macrolepidota*. If it belongs to typical *Pempheris*, the genus cannot be defined as Ogilby has it in his work just cited. With reference to the remarks on p. 62 of Ogilby's paper, it is worth while to add that *P. mülleri* Poey is the type of *Priacanthopsis* Fowler. Fowler merely says "Anal rays 25-32." There is apparently nothing to indicate a distinct genus.

It must be considered certain that *Catalufa* (*compressa*) is a genus distinct from *Liopempheris*; but it remains to be definitely determined whether typical *Pempheris* is a third genus, distinct from both of these.

ENOPLOSIDÆ.

Enoplosus armatus Shaw. Queensland. Scales about 3½ mm. long and a little over 2 broad; apex rounded, simple; sides parallel; basal margin straight or nearly, feebly scalloped; nucleus a little above the middle; basal radii very distinct, 6 to 11, arranged fanwise; circuli normal, but twice as numerous in the region of the basal radii as at the sides; apical field with irregular minute round markings. There is no apical area free from circuli.

Superficially, these scales are like those of the Labridæ, but the apical field is entirely different. Except that they wholly lack the ctenoid patch, they rather closely resemble some Serranidæ, as *Paralabrax*.

Ambassis interrupta (New Guinea; U. S. N. Mus.) has scales with broadly rounded completely cycloid margins, the very fine circuli extending right across the apical field, and completely covering it. There are about seven basal radii. The *Ambassis* scale is, however, entirely different from that of *Enoplosus* in being short, much broader than long; and in having the apical circuli, which are much finer than the basal ones, meeting the basal at very acute angles laterally. Thus, in the circuli, there is an approach to the condition of certain Scombrids. We must suppose that these scales are secondarily cycloid, derived from ctenoid ancestors.

SILLAGINIDÆ.

Sillago ciliata Cuv. & Val. Queensland. Scales quadrate, or broader than long, about 1-1½ mm. diameter; basal radii about 5 to 7; nucleus subapical; circuli not dense, but considerably denser between the radii than at sides; ctenoid

patch well developed but narrow; apical teeth long; subapical elements (one or two rows) broader than long, with a raised phalangiform median structure, corresponding to the shaft of the apical tooth. These scales are much smaller than those of *S. maculata*, and also narrower, but the structural characters exactly agree.

GERRIDÆ = XYSTÆMIDÆ.

There is also a family Gerridæ in Hemiptera, based on *Gerris*. As the insect family appears to have priority, the Gerridæ of Ichthyology may take the name XYSTÆMIDÆ.

Xystæma darnleyensis Ogilby. Darnley Island. Scales broader than long, about 5-7 mm. broad and 4½ long; about 3 to 5 widely divergent, rather weak basal radii; lower margin undulate; nucleus above the middle; circuli extremely fine and dense, transverse, confined to the region level with and below the level of the nucleus; apical field without sculpture; apical margin simple. In some scales the nucleus is surrounded by 5 or 6 complete (circular) circuli, and the circuli for some distance beyond are also circular, but cut off above at the level of the nucleus. The laterobasal circuli also curve upwards, reaching the margin at a very acute angle, though the uppermost lateral circuli reach it practically at a right angle.

This is a typical Gerrid (Xystæmid) scale, except that it has lost the last rudiments of the ctenoid patch. In *Gerres rhombeus* (Mindi Cut, Panama Canal Zone; Meek and Hildebrand) there is a triangular weakly ctenoid patch, the lower corner elongated and pointing to the nucleus. In *Eucinostomus californiensis* (Mindi Cut; Meek and Hildebrand) the ctenoid patch is broad, and the circuli are completely transverse, even at the laterobasal corners. Thus *E. californiensis* is most specialised as to its circuli, but *X. darnleyensis* has gone farther in the direction of the loss of ctenoid elements.

POMACENTRIDÆ.

Amphiprion percula L. Darnley Island. Scales subquadrate, about 1 mm. broad and ¾ mm. long; nucleus a little above the middle; basal radii 5 to 7, very distinct; basal margin crenate or scalloped; circuli normal; ctenoid patch very well developed; marginal teeth sharp, with broad bases.

These differ from other Pomacentrid scales seen in having the circuli relatively much less dense, and the lateral margins of the apical teeth more or less concave instead of straight. The subapical ctenoid elements are inclined to be more or less bottle-shaped.

EPHIPPIDÆ.

Scatophagus ætate varians de Vis. Queensland. Scales very small, diameter about 1-1½ mm.; quadrate, as broad as long, or considerably broader

than long; lower margin wavy but not crenate; laterobasal corners obtuse, but often projecting, the lateral margins then concave; no radii; circuli rather coarse, transverse as far as an obtuse ridge which extends on each side from nucleus to laterobasal corner, then bending and ascending vertically at sides; nucleus just below the apical margin; margin with large, very sharp teeth (about 24), and rows of similar teeth usually (not always) present in the submarginal region, whence they are easily deciduous. There is no ctenoid patch of the ordinary type. *S. multifasciatus,* as figured by Günther, has similar teeth.

This is a very remarkable type of scale, rather suggestive of *Percopsis.* In *Columbia transmontana* (U. S. Nat. Mus.) the scales are very broad, and have a subapical nucleus, and a single (never more than one) row of large and sharp apical teeth (about 20-24); they also are without radii. The scale of *Columbia* is much broader than that of *Scatophagus,* the sides are very much shorter, and the circuli are not so dense.

PLATACIDÆ.

Platax teira Forskal. Queensland. Scales subquadrate, as broad as long, or broader than long, diameter about 2½-3 mm., peculiar for the contracted base, so that the sides converge downwards; laterobasal corners very obtuse; basal radii 3 or 4, very distinct, but close together; circuli fine, normal; nucleus subapical, just below the ctenoid patch, which is only 3 or 4 rows deep; marginal teeth long and sharp; submarginal elements shaped like tree-stumps, distinctly longer than broad.

This resembles *Scatophagus* in the subapical nucleus, but is otherwise very different. Some scales of *Pomacanthus arcuatus* show the contracted base very well.

CHÆTODONTIDÆ.

The species now before me may be separated into three groups as follows:—

Median ribs of apical teeth extending as continuous rods to base of ctenoid area .. .. *Pomacanthus arcuatus.*

Ctenoid patch large, with the elements separate, as usual in Acanthopterygian scales .. 1.

1. Scales much longer than broad, parallel-sided; nucleus subapical, just below the ctenoid patch; basal radii 6 to 8; circuli excessively fine; ctenoid elements like those of *Chætodon* (Queensland) .. .. *Microcanthus strigatus* Langsd.

Scales not longer than broad, usually broader than long *Chætodon, Chelmon,* and *Heniochus.*

It is impossible to find satisfactory characters for the separation of the species of *Chætodon, Chelmon,* and *Heniochus.* The ctenoid elements of *Chelmon* are coarser than those of *Heniochus,* but the structure is the same. The scales of these fishes must be easily deciduous, judging from the large number of latinucleate ones.

The species examined are—

Chætodon ephippium C. & V. Queensland.
„ *octofasciatus* Bloch. „
„ *flavirostris* Günther. „
„ *trifasciatus* Park. „
„ *ulietensis* C. & V. Samoa.
„ *bricci* Smith. Atlantic.
Heniochus chrysostomus C. & V. Queensland.
Chelmon rostratus C. & V. Queensland.

SCALES OF POMACANTHINÆ.

(1) The scales of *Holacanthus* and *Chætodontoplus* are entirely of the same general type as those of *Pomacanthus*. (Cf. Bull. U. S. Bur. Fish., xxxii, p. 167, f. 39.)

(2) These scales are very different in their ctenoid area from those of the *Chætodontinæ*, and taking this fact along with others, it may perhaps be a question whether the *Pomacanthinæ* should not stand as a distinct family *Pomacanthidæ*.

(3) Having in view the characters of related families, there can be no doubt, I think, that the scale-characters of the *Pomacanthinæ* are strongly modified from the more primitive type of the group, which is much more nearly approached by the *Chætodontinæ*. The special modification is however entirely in the ctenoid (apical) area.

(4) Among the *Holacanthinæ*, *Holacanthus bicolor* shows the nearest approach to the chætodontine scales, having the lower (mesad) part of the ctenoid area with small separate elements, instead of the usual continuous long rods or ridges. There is some indication of this sort of thing in *Pomacanthus arcuatus*.

(5) *Holacanthus bicolor*, with its well defined converging basal radii, appears to approach a relatively primitive type; but its ctenoid area, with long parallel rods, seems extremely modified. There is a singular resemblance, doubtless quite superficial, to the ctenoid area of *Aphrododerus* (Bull. U. S. Bur. Fish., xxxii, p. 153, f. 13).

(6) The *Chætodontoplus* scale with its comparatively narrow form and rounded base is peculiar, but the ctenoid area agrees with that of *H. bicolor*. The differences are much less significant than the resemblances.

SIGANIDÆ.

Although no Siganidæ are included in the collection from the Queensland Museum, I take occasion to record that the minute (1 mm. long or less) scales of *Siganus javus* (Cavite, Philippine Is.; Geo. A. Lung, U. S. Nat. Mus.) are elongate-oval, with the nucleus near the beginning of the basal third; circuli fine and perfectly regular; margin simple; no traces of radii or ctenoid elements. There is thus no resemblance whatever to the Chætodontidæ, Plataeidæ, Ephippidæ, or Scorpididæ.

SCORPIDIDÆ.

Monodactylus argenteus L. Queensland. Scales quadrate, about $2\frac{1}{2}$-$3\frac{1}{2}$ mm. diameter; nucleus subapical, just below ctenoid patch; basal radii one or two, usually very close together, sometimes rudiments of others; ctenoid patch large, but the elements very small and weak, marginal teeth extremely small; circuli fine, the uppermost lateral almost completely transverse, the lower lateral oblique, not vertical. (The lateral circuli are completely vertical in *Platax* and *Microcanthus*).

This is quite distinct from the other families discussed above.

GOBIIDÆ.

Krefftius australis Krefft. Queensland. Scales about 5-6 mm. broad and $4\frac{1}{2}$-5 long; of the usual form for the family; a single row of sharp teeth on apical margin, small in the middle, long at the sides; basal radii about 16 to 18. Latinucleate scales have all the teeth large. Compared with *Hypseleotris compressus*, these scales are larger, and not so broad in proportion to their length; but the structure is essentially the same. Gobiid scales are very uniform all over the world, differing only in minor characters. Thus *Chonophorus nelsoni* (Rio Culebra, Panama; Meek and Hildebrand) has the scales longer than broad, with only 6 to 9 basal radii. The lateral circuli also are much less numerous than in *Krefftius australis*.

PTEROPSARIDÆ.

Parapercis cylindrica Bloch. Darnley Island. Scales about 2-$2\frac{1}{2}$ mm. diameter, quadrate, or longer than broad, the sides parallel, or diverging basally; about 7 to 13 basal radii, arranged fanwise; basal margin scalloped; basal circuli very dense; lateral circuli widely spaced, completely vertical; ctenoid patch large, the marginal teeth large and sharp, the submarginal elements mostly about as long as broad. Other scales of this species, from a different locality (presumably), were described in my former paper. Authors refer the genus to the Nototheniidæ, or to the Leptoscopidæ.

BOTHIDÆ (or PLEURONECTIDÆ).

Regan makes the Bothidæ a family distinct from Pleuronectidæ.

Platophrys pantherinus Ruppell. Darnley Island. Scales subquadrate, about 1-1¼ mm. long, the basal middle more or less extended, and the laterobasal corners ill-defined; circuli very dense; radii basal and lateral, very fine and numerous. The scales of the upper (coloured) side are strongly ctenoid, with a single row of about 18-23 long sharp teeth. Those of the blind side are cycloid, with circuli and radii crossing in the apical field, forming an irregular cancellation. In my key to Pleuronectid scales (Proc. Biol. Soc. Washington, Oct. 31, 1911) this runs straight to *Platophrys,* and falls with *P. constellatus,* from which it differs by the generally longer scales. All *Platophrys* examined have the cancellate structure in the apical field. The species differ in the number of marginal teeth on the ctenoid scales; thus in *P. podas* they are not nearly so numerous as in *P. pantherinus.*

SOLEIDÆ.

Aserragodes macleayanus Ramsay. Queensland. Scales elongate, about 2 mm. long and 1 broad; nucleus subapical; circuli dense; radii very numerous, though not so dense as in *Platophrys pantherinus*; ctenoid patch well developed; marginal teeth very large, usually 9, sometimes fewer, structure of ctenoid area practically as in *Aphoristia,* not at all as in *Achirus,* though the genus has been referred to the Achirinæ. The radial system also is wholly unlike that of *Achirus,* but does resemble that of *Aphoristia.*

NOTES AND ILLUSTRATIONS OF QUEENSLAND FISHES.

By Allan R. McCulloch, Zoologist, Australian Museum.

(Plates XVI–XVIII.)

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Family PSEUDOCHROMIDIDÆ.

Genus PSEUDOCHROMIS, Rüppell.

Pseudochromis, Rüppell, Neue Wirbelth. Fische, 1835, p. 8 (*P. olivaceus,* Rüppell).
Assiculus, Richardson, in Stokes, Discov. in Austr., i., 1846, p. 492 (*A. punctatus,* Richardson).
Onar, de Vis, Proc. Linn. Soc. N. S. Wales, ix., 1885, p. 875 (*O. nebulosum,* de Vis).

Assiculus, Richardson, is evidently identical with *Pseudochromis.* The several characters relied upon by Richardson to distinguish his genus are all more or less developed in different species of *Pseudochromis.*

A co-type of *Onar nebulosum,* de Vis, is in the Australian Museum collection, which does not differ from Rüppell's genus.

PSEUDOCHROMIS PUNCTATUS, Richardson.

Assiculus punctatus, Richardson, in Stokes, Discov. in Austr., i., 1846, p. 494, pl. ii., fig. 1.
Pseudochromis Mülleri, Klunzinger, Sitzb. Akad. Wiss. Wien, lxxx. i., 1879, p. 370. *Id.,* Macleay, Proc. Linn. Soc. N. S. Wales, ix., 1884, p. 28. *Id.,* Waite, Rec. Austr. Mus., vi., 1905, p. 62.
Cichlops filamentosus, Macleay, Proc. Linn. Soc. N. S. Wales, v., 1881, p. 570.

Six examples, 53-89 mm. long, agree almost entirely with the description and figure of *Assiculus punctatus,* as well as with *P. mulleri* and *Cichlops filamentosus.* Being in a better state of preservation than Richardson's type specimen, they have the body thicker than his figure shows it to be, and the top of the head and nape flattened instead of sharp. Most of the dorsal rays are simple instead of divided, but the anterior portion of that fin was damaged in the type. In none of my specimens is the sub-opercular border crenulate as he described it, but they agree so well in all other details that I have no doubt they are correctly identified.

They vary in colour, after preservation in formalin, from light to dark brown, with more or less numerous, dark (blue) dots on the head and anterior half of the body. A large black blotch is present on the spinous portion of the dorsal, and the remainder of that fin, together with the anal and caudal, may be nearly plain, or closely covered with minute ocelli.

Loc.—Useless Inlet, Shark Bay, Western Australia.

PSEUDOCHROMIS NOVÆ-HOLLANDIÆ, Steindachner.

(Plate XVI, Fig. 1.)

Pseudochromis novæ-hollandiæ, Steindachner, Sitzb. Akad. Wiss. Wien, lxxx. i., 1879, p. 160.
? Polyacanthus queenslandiæ, Kent, Gt. Barrier Reef, 1893, p. 308, pl. xvi., fig. 8.

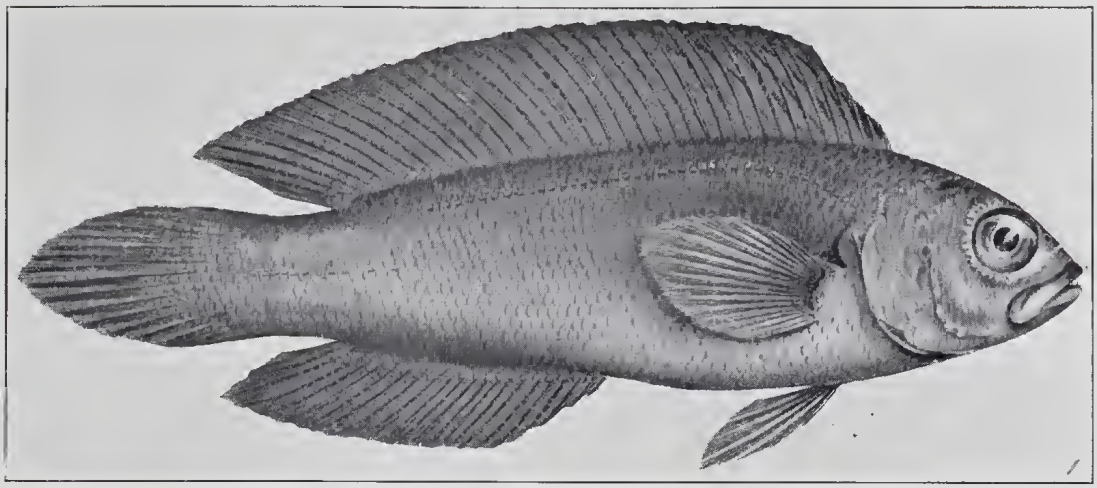
D. iii/37; A. iii/20; P. 18; V. i/5; C. 17. L. lat. 42-43+12; L. tr. 20. Head 3.5, depth before the ventrals 3.3 in the length to the hypural. Snout 1.3, interorbital space 1.8 in the eye, which is 3.3 in the head. Third dorsal spine 3.3, third last dorsal ray 1.4 in the head. Third last anal ray 1.3, pectoral 1.1, ventral 1.3 in the head.

Body compressed, broadest at the operculum. Head blunt, the upper profile convex from the snout to the anterior portion of the dorsal fin. Caudal pedunele very broad and compressed. Head with several series of mucous canals extending around the eyes, along the margins of the preorbital, preoperculum, and tip of opercular lobe. Two other series descend obliquely backwards from the side of the nape, the first to above the preoperculum and the second to the origin of the lateral line. Mandible with three pores on each side below. Nostrils almost on the upper surface of the snout, the anterior tubular, the posterior an open pore. Maxillary nearly reaching to below the middle of the eye.

Teeth cardiform, in a single series on the sides of the upper jaw; a band of villiform teeth anteriorly, with one or two strong canines on each side of the symphysis. The teeth of the lower jaw are similarly arranged, but the lateral ones increase in size towards the middle of each ramus. A large patch of villiform teeth on the vomer, and a smaller one on each palatine.

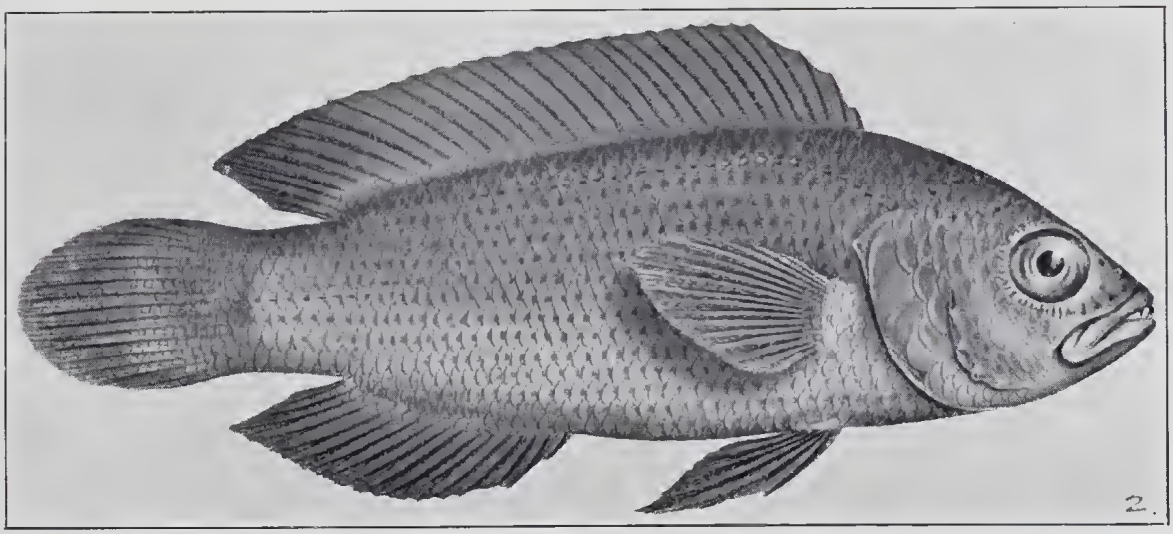
Body covered with moderately large, ctenoid scales, which extend forward to the interorbital space, and on the sides of the head. They are arranged in about six rows on the cheek, and are very large and irregular on the operculum. The bases of the dorsal and anal fins are protected by a low sheath of scales, and the basal half of the caudal is similarly covered. Lateral line rising rapidly from the operculum towards the back, with which it runs parallel to below the twenty-eighth dorsal ray; it is separated from the base of the dorsal by two scales. Six or seven rows below its termination it recommences, and extends along the middle of the caudal peduncle. There are forty-nine rows of scales between the upper end of the gill-opening and the hypural joint.

Dorsal fin originating above the operculum. The spines and anterior rays increase rapidly in height, but those of the remainder of the fin are subequal in length, increasing only slightly to the third last; the latter reaches the end of the first third of the caudal when adpressed. Anal similar to the dorsal. Pectoral rounded, the seventh ray longest, and not quite reaching the verticle of the vent. Ventrals elongate, pointed, inserted below the anterior base of the pectoral. Caudal pointed.



PSEUDOCHROMIS NOVÆ-HOLLANDIÆ Steindachner. $\frac{2}{3}$ Nat. Size.

A. R. McCulloch, del.



PSEUDOCHROMIS NEBULOSUS (de Vis). $\frac{2}{3}$ Nat. Size.

A. R. McCulloch, del.

Face page 48.

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Colour.—Head and body dark brown, the sides between the pectoral fin tinged with deep red. All the fins except the ventral very dark, almost black; a black blotch between the dorsal spines, and some narrow oblique dark lines on the anterior rays.

Described and figured from a specimen 87 mm. long.

Colour variety A.—A second specimen differs in being much lighter in colour, with distinct markings. In life, the head and anterior portion of the body was deep pink, the rest of the body being sage green. A dark blue line extends round the lower and hinder margins of the eye, and there are two similar marks on the cheeks. Pectoral and ventral pale pink. Dorsal bright green, margined with a yellow and blue line; a dark spot is present between the spines, and there are longitudinal series of spots near the base of the fin. Anal similar to the dorsal. Caudal sage green with an oblique searlet and blue marginal band on each lobe. D. iii/35; A. iii/20. L. lat. 42+14; 50 rows of scales between the gill-opening and the hypural.

Colour variety B.—A third example is intermediate between the first and second specimens, being lighter like the last but having none of its striking colour markings. D. iii/36; A. iii/20. L. lat. 43+12; 50 rows of scales between the gill-opening and the hypural.

These three specimens differ slightly from Steindachner's brief description in their proportions and fin formula, but they vary somewhat among themselves, and I have little doubt that they are correctly identified. Their remarkable colour variation suggests that they represent more than one species, but as I found them living together in the same pool, and there being no important structural differences between them, I prefer to regard them as one.

The name *Polyacanthus queenslandiæ,* Kent, was founded on a colour sketch of a fish from Adolphus Island, Torres Strait. It has the general form of a *Pseudochromis,* while its pink and grey colouration partially corresponds to my variety A.

Loc.—Masthead Island, Capricorn Group, off Port Curtis, Queensland; in a pool on the coral reef. Steindachner's type was taken at Port Denis (Port Denison, Queensland).

PSEUDOCHROMIS NEBULOSUS, de Vis.

(Plate XVI, Fig. 2.)

Onar nebulosum, de Vis, Proc. Linn. Soc. N. S. Wales, ix., 1885, p. 875.

D. iii/27; A. iii/14; P. 18; V. i/5; C. 17. L. lat. dex. 32+9; sin. 27+9. Head 3, depth before the ventrals 3 in the length to the hypural. Snout 1.2,

interorbital space 1.7 in the eye, which is 3.4 in the head. Third dorsal spine 3.4, third last dorsal ray 1.9 in the head. Third last anal ray 1.9, pectoral 1.3, ventral 1.3 in the head.

Body compressed, broadest at the operculum. Head moderately pointed, the upper profile from the snout to the first dorsal spine very slightly convex. Caudal peduncle broad and compressed. Head with several series of mucous canals extending around the eyes, along the margins of the preorbital, preoperculum, and tip of opercular lobe. Two other series descend obliquely backwards from the side of the nape, the first to above the preopercular and the second to the origin of the lateral line. Mandible with three pores on each side below. Nostrils almost on the upper surface of the snout, the anterior in a low tube, the posterior a simple opening. Maxillary not quite reaching the vertical of the middle of the eye.

Teeth cardiform and in a single series on the side of the upper jaw; a band of villiform teeth anteriorly, with two very strong curved canines on either side of the symphysis. A villiform band on the mandible anteriorly; on the sides they are cardiform and increase in size to the middle of each ramus, where they become abruptly minute. A small canine on each side of the mandibular symphysis, followed by a very large, curved one which overlaps the upper jaw. A single row of moderately strong teeth on the vomer, and a few on the end of each palatine.

Body covered with moderately large, ctenoid scales, which extend forward to the interorbital space and sides of the head. They are arranged in five or six rows on the cheek, and are very large and irregular on the operculum. Bases of dorsal and anal fins protected by a low sheath of scales, and the basal half of the caudal is similarly covered. Lateral line rising rapidly from the operculum towards the back, with which it is parallel to below the fifteenth dorsal ray; it is separated from the base of the dorsal by two scales. Six rows below its interruption, it recommences, and extends along the middle of the caudal peduncle. There are thirty-nine rows between the upper end of the gill-opening and the hypural.

Dorsal fin originating over the end of the operculum. The spines and anterior rays increase rapidly in height, but those of the remainder of the fin are subequal in length, increasing only slightly to the third last; the latter reaches the end of the first fourth of the caudal when adpressed. Pectoral rounded, the seventh ray longest, not quite reaching the vertical of the vent. Ventrals elongate, pointed, inserted below the anterior base of the pectoral. Caudal moderately pointed, the tip rounded.

Colour.—Uniform brown after long preservation, the dorsal, anal, and ventrals darker. Each scale of the body has a dark basal spot.

Described and figured from a specimen, 62 mm. long, in the collection of the Australian Museum. It was received in exchange from the Queensland Museum as a co-type of *Onar nebulosum*, de Vis, and I have no doubt that it is one of the original specimens. But it proves the description of the species to be very inaccurate, the dorsal formula being iii/27 instead of ii/17, while the height is 3.8 instead of $4\frac{1}{3}$ in the total length. Four other specimens, 45-78 mm. long, are in the old collection of the Australian Museum, one of which is from Duke of York Island, and the others are without data. The larger ones differ from the co-type in having some of the ventral rays filamentous and reaching the origin of the anal. The number of enlarged canines in the anterior part of each jaw varies from one to three pairs. D. iii/25-27; A. iii/14-15.

Loc.—Murray Island, Torres Strait. Duke of York Island, New Britain.

Family PLESIOPIDÆ.

Genus BELONEPTERYGION, gen. nov.

Body moderately elongate, compressed, covered with large ctenoid scales. Three lateral lines, the first near the back, the second along the middle of the side, and the third above the base of the anal fin. Dorsal about xviii/6, anal about x/5; ventral i/2. Head naked, with rows of mucriferous canals and pores surrounding the eye, and extending along the margin of the preorbital and preopercular; others cross the nape, and there are some pores on the under surface of the mandible. Bands of minute teeth on the jaws, and two groups on the vomer; palatines and tongue toothless.

Type.—Acanthoclinus fasciolatus, Ogilby.

This genus is very similar to *Acanthoclinus*, Jenyns,[1] but differs in having no palatine teeth, and the scales are large and ctenoid instead of minute and cycloid. It is apparently also related to *Acanthoplesiops*,[2] but that genus has only one lateral line.

BELONEPTERYGION FASCIOLATUM, Ogilby.

Acanthoclinus littoreus vel fasciolatus, Ogilby, Mem. Austr. Mus., ii., 1889, p. 63, pl. iii., fig. 3. *Acanthoclinus litoreus*, Waite, Rec. Austr. Mus., v., pt. 3, 1904, pp. 184, 225. *Id.*, McCulloch, Proc. Linn. Soc. N. S. Wales, xxxv., 1910, p. 431. *Id.*, Ogilby, Mem. Qld. Mus., ii., 1913, p. 92 (nec. Jenyns).

Having compared specimens of this species with a New Zealand example of *Acanthoclinus litoreus*, Jenyns, I find generic differences between them as noted above. There is a remarkable resemblance in the colour-marking of the two, though the body-colour of *B. fasciolatum* varies from light brown with dark cross-bars to deep black.

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[1] Jenyns, Zool. "Beagle," iii., 1841, p. 91.

[2] Regan, Ann. Mag. Nat. Hist. (8), xii., 1913, p. 114.

This species is not uncommon in pools on the coral reefs of Lord Howe Island and Queensland.

Family LUTIANIDÆ.

Genus LUTIANUS, Bloch.

LUTIANUS SUPERBUS, Castelnau.

(Plate XVII.)

Diacopus superbus, Castelnau, Proc. Linn. Soc. N. S. Wales, ii., 1878, p. 228.
Mesoprion superbus, Macleay, Proc. Linn. Soc. N. S. Wales, v., 1881, p. 331.

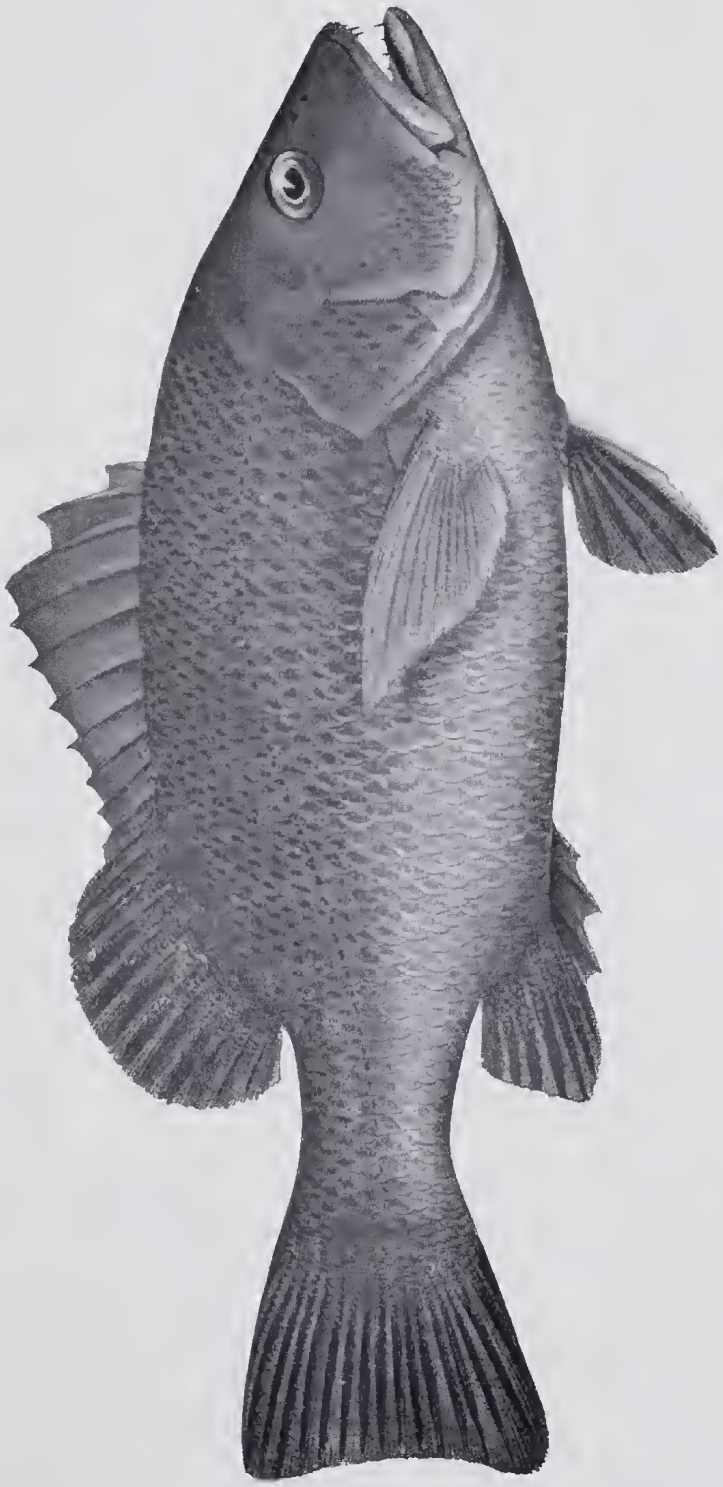
D. X.13; A. III.8; P. 17; V. 1.5; C. 17. L. lat. 46 to the hypural joint. Depth before the ventral fins, 2.9 in the length to the hypural joint; head, including the opercular flap, 2.8 in the same. Snout 3.1, eye 6.1, caudal peduncle 2.1 in the head. Pectoral 1.4, third dorsal spine 2.6 in the head.

Profile from the snout to the first dorsal spine convex, the upper line of the head almost straight. Upper portion of head naked, a few large scales extending obliquely backward on either side of the nape. Cheek scales in seven rows. Maxillary reaching back to below the anterior portion of the eye. Preopercular notch large and open, the posterior margin finely serrated, the angle rounded and denticulated. Operculum unarmed, the posterior lobe somewhat pointed.

Upper jaw with three canines on either side of the symphysis, of which the first is the smallest, and the second the longest. Behind these a row of widely spaced canines extends along each side, and there is an inner band of minute villiform teeth. Lower jaw with a similar row of larger canines, and a very small band of villiform teeth anteriorly. Vomerine teeth forming a triangular patch with a median posterior extension; the lateral angles are also produced. Microscopic teeth are present on the palatines and tongue.

Scales somewhat oblique above the lateral line, almost horizontal below it. There are seven scales between it and the middle of the spinous dorsal, and sixteen more to the median ventral line. The pore-bearing scales of the lateral line are small and intercalated between the others. The bases of the dorsal, anal, and caudal fins are scaly, the scales extending about halfway up between the rays.

Third and fourth dorsal spines longest, the last a little higher than the penultimate one; the margin of the second dorsal is rounded, the median rays being longest and but little shorter than the third spine. Anal spines strong, the third the longest; the fin is short and somewhat pointed, the third ray being longest, longer than the dorsal spines. Pectoral falcate, not reaching back to the level of the vent. Ventrals inserted well before the first dorsal spine, and a little behind the pectorals. Caudal slightly emarginate.



LUTIANUS SUPERBUS (Castelnau). ⅔ Nat. Size.

A. R. McCulloch. del.

Face page 52.

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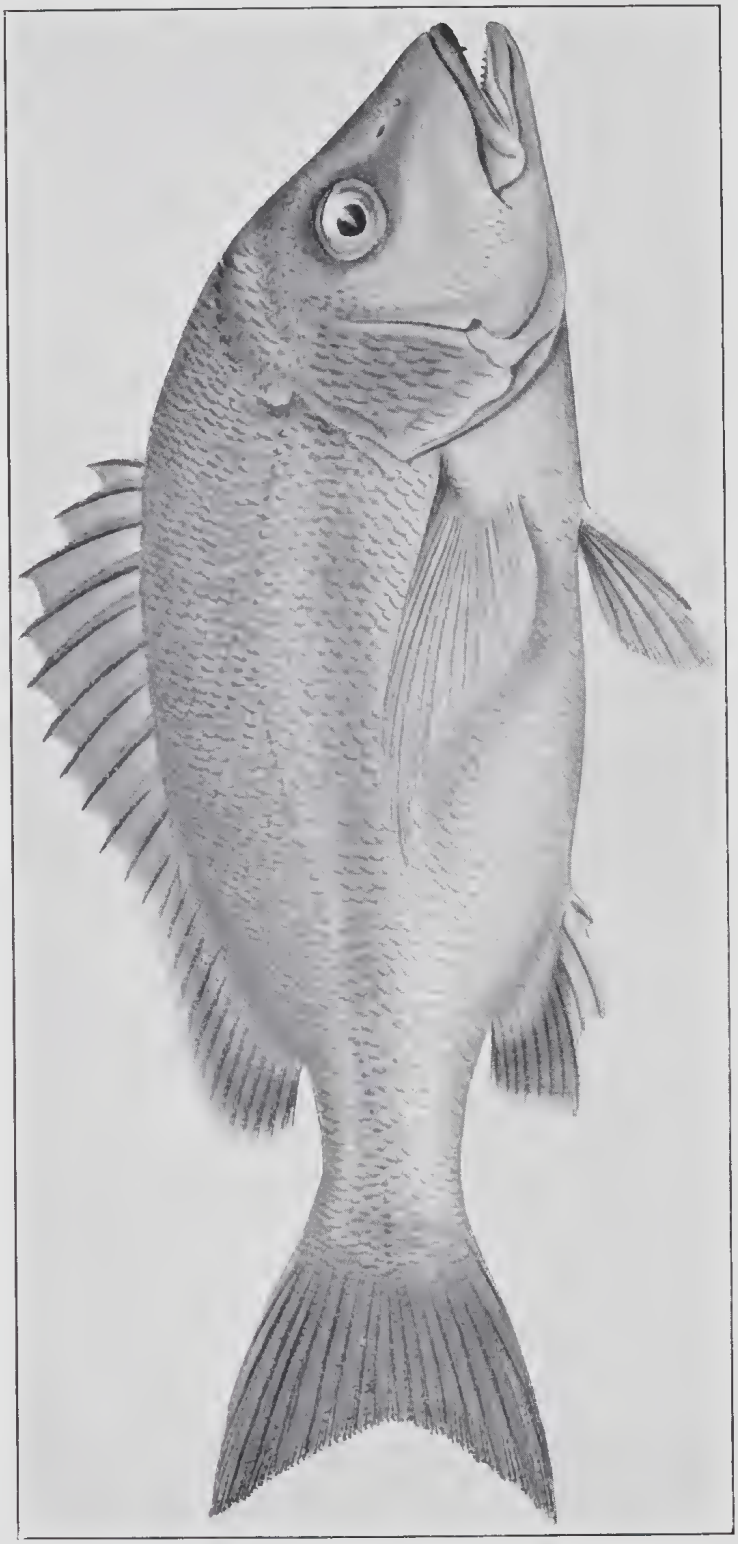

LUTIANUS AMABILIS (de Vis). ⅔ Nat. Size.

A. R. McCulloch, del.

Colour.—Purplish brown on the upper half when fresh, the margins of each scale lighter; lower portion changing to deep violet pink, the centre of each scale darker and having a whitish vertical streak near its outer edge. Head similar to the body, the cheeks with a greenish tinge. Dorsal and caudal pinkish orange, the membrane between the rays dark purple. Pectoral, ventral, and anal rays pink, the membrane darker. After preservation the fish is almost uniformly purplish brown, the margins of the scales being lighter.

Described and figured from a single specimen, 545 mm. long, which differs in several of its characters from the very short description of *Diacopus superbus,* particularly in the size of the eye, armature of the preoperculum, and form of the anal spines. Castelnau's type was taken in Moreton Bay, where it was said to be known as the Red Bass, and was regarded as a good table-fish. Mr. J. D. Ogilby has examined a copy of my description and figure, and informs me that my fish is common on the Snapper-banks outside Moreton Bay, and is often called Red Perch by Brisbane fishermen.

This fish is very similar to *Lutianus rubens,* Macleay,[3] but the scales of that species are somewhat smaller, there being fifty on the lateral line between the operculum and the hypural. The vomerine teeth form a ⋀-shaped patch, the anal fin is rounded anteriorly instead of angular, and the caudal is more emarginate than in the specimen described above.

Loc.—Near the mouth of the Clarence River, New South Wales.

LUTIANUS AMABILIS, de Vis.

YELLOW-BANDED HUSSAR.

(Plate XVIII.)

Genyoroge amabilis, de Vis, Proc. Roy. Soc. Qld., i., 1884, p. 145.

D. xi/14; A. iii/8; V. i/5; P. 17; C. 17. L. lat. 52. Height of body 2.7 in the length from the snout to the hypural, and almost equal to the full length of the head. Eye 2.1 in the snout, which is 2.4 in the head. Preorbital 4.1, fourth dorsal spine nearly 3, and pectoral 1.12 in the head.

Upper profile slightly concave on the snout, convex from above the eye to the first dorsal spine. Upper portion of the head almost naked; three rows of large scales on either side of the nape. Cheek scales in six rows. Maxillary reaching backward to below the anterior third of the eye. Preopercular notch deep; the posterior margin is minutely serrated, the lower angle produced somewhat backward and finely serrated. Operculum unarmed, its hinder lobe pointed.

[3] Macleay, Proc. Linn. Soc. N. S. Wales, viii., 1883, p. 232.

Upper jaw with a strong canine on either side of the symphysis, and a second a little farther back; behind these is a single row of canines, and there is an inner band of minute villiform teeth. Lower jaw with a similar row of large canines, and a band of villiform teeth anteriorly. Vomerine teeth forming a Λ-shaped patch, without a median posterior extension. Patches of microscopic teeth are present on the palatines, roof of mouth, and tongue.

Scales oblique above and below the lateral line. There are about seven rows between it and the middle of the spinous dorsal fin, and about twenty-one more to the median ventral line. The pore-bearing scales of the lateral line are fifty-two in number between the operculum and the hypural joint; there are about fifty-four or seventy-two rows above them, according to the direction in which they are counted, and fifty-nine or sixty-nine below. The bases of the second dorsal, anal, and caudal are scaly, the scales extending up between the rays.

Fourth and fifth dorsal spines longest, the last shorter than the penultimate one; the margin of the second dorsal is rounded, and the longest rays are a little shorter than the highest spines. Anal spines very strong, the second and third subequal in length; the soft part of the fin is somewhat pointed, the second ray longest, longer than the fourth dorsal spine. Pectoral falcate, elongate, reaching a little beyond the vertical of the vent. Ventrals inserted behind the vertical of the first dorsal spine. Caudal emarginate.

Colour.—Rose pink above, becoming white below. The scales of the upper half with pale bluish-pink centres and indefinite yellow spots. A broad yellow band from the preoperculum to the base of the caudal. Upper part of head deep pink, darker than the body, the occipital scales, cheeks, and opercles lighter. Eye pink and yellow, surrounded by an irregular, dark yellow ring, which extends forward onto the preorbital below the nostrils. Dorsal fin pink, lighter at the base, the soft portion with a broad white border. Anal similar to the soft dorsal. Caudal deep pink. Pectoral pale pink, a yellow blotch on the upper part of the base. Ventrals pinkish white.

Described and figured from a specimen 478 mm. long.

Locs.—This species has hitherto been known only from Southern Queensland, but specimens are occasionally forwarded to the Sydney markets which are caught off the mouths of the northern rivers of New South Wales. For the opportunity of examining one of these I am indebted to Mr. T. C. Roughley, who obtained it in a local fish-shop. I also have four specimens, about 340 mm. long, from North Reef, Queensland, which do not differ from the one described above.

Family HALIOPHIDÆ.

Body elongate, covered with rudimentary scales imbedded in the skin. Lateral line incomplete. Head with several series of mucous canals extending around the eye, preopercular, mandible, and nape. Opercular with a strong spine. Gill-opening lateral, the membranes broadly united with the isthmus. Teeth strong, in one or more series on the jaws. Vomer toothed, palatines smooth. Dorsal and anal confluent with the caudal, composed of soft rays, the former preceded by a strong spine. Pectorals well developed; ventrals present or absent.

Includes two genera—*Haliophis,* Rüppell, and *Blennodesmus,* Günther.

This family is closely allied to Congrogadidæ, but differs in the possession of a dorsal spine and vomerine teeth, while the gill-membranes are united with the isthmus instead of being free.

Genus HALIOPHIS, Rüppell.

HALIOPHIS MALAYANUS, Weber.

Haliophis malayanus, Weber, "Siboga" Exped., Fische, lvii., 1913, p. 550, fig. 120.

Seven specimens are in the old collection of the Australian Museum, which agree very well with Weber's description and figure.

Loc.—Derby, North-Western Australia.

Genus BLENNODESMUS, Günther.

Blennodesmus, Günther, Proc. Zool. Soc., 1871, p. 103 (*B. scapularis,* Günther).

Günther overlooked the strong, partially adpressed spine before the dorsal when defining this genus. In this detail it agrees with *Haliophis,* but differs in having minute ventral fins and smaller scales, while the vomerine teeth are also less developed.

BLENNODESMUS SCAPULARIS, Günther.

Blennodesmus scapularis, Günther, Proc. Zool. Soc., 1871, p. 103, pl. lxvii., fig. *a*.

The relative proportions of the head and body and the tail vary in different specimens, the length from the tip of the lower jaw to the vent being 2.7-3 in the total. The largest specimen examined is 81 mm. long.

Locs.—Masthead Island, off Port Curtis, Queensland; in coral pools. Shark Bay, Western Australia. Derby, North-Western Australia.

EXPLANATION OF PLATE XVI.

Fig. 1. *Pseudochromis novæ-hollandiæ,* Steindachner. A specimen 87 mm. long, from Masthead Island, Queensland.

Fig. 2. *Pseudochromis nebulosus,* de Vis. A co-type of the species, 62 mm. long, from Murray Island, Torres Strait.

EXPLANATION OF PLATE XVII.

Lutianus superbus, Castelnau. A specimen 545 mm. long, caught off the mouth of the Clarence River, New South Wales.

EXPLANATION OF PLATE XVIII.

Lutianus amabilis, de Vis. A specimen 478 mm. long, from the northern portion of the coast of New South Wales.

EDIBLE FISHES OF QUEENSLAND.

Part III.—CARANGIDÆ (No. 1).

By J. Douglas Ogilby (Ichthyologist).

(Plates XIX-XXVIII.)

As this paper deals with a part only of this large and important family, it is unnecessary to give any particulars at this stage, further than to say that so far as is known about 45 species occur in our waters, of which the following ten are described and figured below:—

1. Decapterus russellii, p. 59, Pl. XIX.
2. Alepes kalla, p. 62, Pl. XX.
3. Caranx speciosus, p. 67. Pl. XXII.
4. Carangus bucculentus, p. 73, Pl. XXI.
5. Citula gracilis, p. 75, Pl. XXIII.
6. Citula chrysophrys, p. 77, Pl. XXIV.
7. Citula aurochis, p. 79, Pl. XXV.
8. Alectis indica, p. 83, Pl. XXVI.
9. Alectis ciliaris, p. 88, Pl. XXVII.
10. Trachinotus botla, p. 93, Pl. XXVIII.

Note:—For the purpose of facilitating an analysis of all the information acquired with regard to the geographical distribution of our fishes, I propose, in this and all succeeding papers, to divide Queensland into three zoological districts as follow:—

South Queensland (S.Q.).—

Embracing all the coastline between the mouth of the Tweed River (our natural boundary) and the Tropic of Capricorn, the islands and reefs outlying therefrom, and the hinterland to the South Australian and Northern Territory Marches; having Brisbane as its metropolis, and Moreton Bay (Brisbane River), Wide Bay (Great Sandy Strait and Mary River), Hervey Bay (Burnett River), and Port Curtis (Calliope River) as its principal inlets.

Middle Queensland (M.Q.).—

Extending in similar fashion from the Tropic to latitude 20° S., with Rockhampton as its chief city, and Keppel Bay (Fitzroy and Dawson Rivers), Shoalwater Bay, Broad Sound, Pioneer River, Repulse Bay (Proserpine River), and Edgecumbe Bay (Don River). And

North Queensland (N.Q.).—

Comprising York Peninsula and the Gulf of Carpentaria, with their respective islands, reefs, rivers, and hinterlands south to the twentieth parallel.

The following abbreviations will be employed throughout the work:—

A.M., Australian Museum; B.I., British India; B.N.G., British New Guinea; B.R., Barrier Reef; D.N.G., Dutch New Guinea; M.Q., Middle Queensland; N.Q., North Queensland; N.S.W., New South Wales; N.T., Northern Territory; O.C., Old Collection; Q.M., Queensland Museum; S.A., South Australia; S.Q., South Queensland; Tas., Tasmania; T.S., Torres Strait; Vic., Victoria; W.A., West Australia; W.I., West Indies.

We take this opportunity of thanking Miss Phyllis Clark of Sydney for the evident care which she has taken in the production of the admirable drawings which illustrate this paper; also to Mr. Allan R. McCulloch for many valuable suggestions.

DECAPTERUS Bleeker.

Decapterus Bleeker, Nat. Tijds. Nederl. Ind., i, 1851, p. 352[1] (*kurra*); Jordan & Evermann, Fish. North & Mid. Amer., pt. 1, 1896, p. 907.

Eustomatodus Gill, Proc. Acad. Nat. Sci. Phila., 1862, p. 261 (*kurroides*).[2]

Gymnepignathus Gill, ibid. (*macrosoma*).

Evepigymnus Gill, ibid. (*hypodus*).

Body elongate-elliptical to elongate, subfusiform. Scales small and cycloid, covering the whole body except the nuchal ridge. Lateral line feebly curved, consisting of enlarged scales throughout its entire length, those on the straight section wholly or in part spinigerous. Head moderate or large, compressed, with pointed snout, the cheeks, temples, and occiput mostly scaly. Mouth terminal, protractile, with rather small oblique cleft, the jaws equal or the lower slightly projecting; maxillary rather short, strongly dilated distally, with well developed supplemental bone. Dentition feeble; teeth in the jaws minute, mostly in a single series; similar teeth on the vomer and the palatines, and usually on the tongue. Nostrils small and contiguous. Eyes large, lateral, median or nearly so, with well developed adipose lid. Spinous dorsal well developed, persistent, with 7 to 9 flexible spines; soft dorsal and anal lobes low, each succeeded by a single pinnule, the former with 27 to 36, the latter with 23 to 30 soft rays; free anal spines strong. Caudal small and narrowly forked. Pectoral moderate and falcate, with 21 to 23 rays. Ventrals moderate, originating below the pectoral-base. Gill-rakers rather long and slender. (δέκα, ten; πτερόν, a fin: the pinnulæ being reckoned as separate fins, but the two anals as one.)

Small scombriform trevallies, frequenting nearly all temperate and tropical seas. At least 20 species are recognised as valid. In all probability two other species of *Decapterus*—*D. leptosomus*[3] and *D. muroadsi*[4]—occur on our coast,

[1] Since it has been proved that *russellii* (= *kurra*) possesses lingual teeth this subgenus becomes merged in *Decapterus*.

[2] Authors have conspired to take Bleeker's paper in Verh. Batav. Gen., xxiv, 1852, as the earliest exposition of his carangin genera (except *Uraspis* 1855), and Jordan, Evermann, and Waite have even quoted it as "*Decapterus* 1855" (idd. supra and Rec. Austr. Mus., v, 1904, p. 199), but the paper quoted above antedates both these diagnostic keys.

[3] Ogilby, Proc. Linn. Soc. N. S. Wales, xxii, p. 761.

[4] *Caranx muroadsi* Schlegal, Faun. Japon., Pisc., p. 108.

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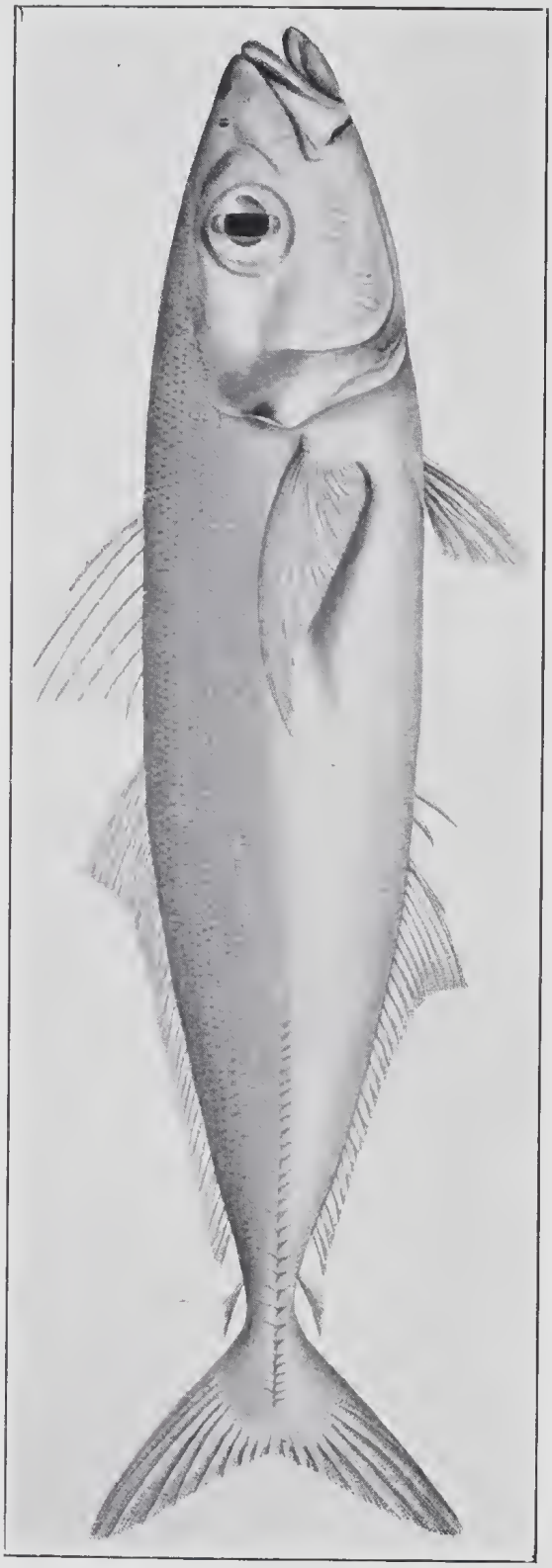


DECAPTERUS RUSSELLII (Rüppell). ⅔ Nat. Size.

Phyllis Clarke del.

and we, therefore, give the following key to enable observers to distinguish them when captured, in the hope that they will forward specimens to the Queensland Museum.

a^1. Lateral line with less than 30 scutes, the straight section only partly armed.

b^1. Upper jaw with a series of small teeth .. .. *muroadsi.*

b^2. Upper jaw toothless .. .. *leptosomus.*

a^2. Lateral line with 35 scutes or more, the straight section armed throughout .. *russellii.*

DECAPTERUS RUSSELLII (Rüppell).

Kurra Wodagawah Russell, Fish. Vizagapatam, ii, 1803, p. 30, pl. cxxxix.

Caranx russellii Rüppell, Atlas Fisch. Roth. Meer., 1828, p. 99; Boulenger, Proc. Zool. Soc. London, 1887, p. 660.

Caranx kurra Cuvier & Valenciennes, Hist. Nat. Poiss., ix, 1833, p. 44 (*after Russell*); Jerdon, Madras Journ. Lit. & Sci., 1851, p. 137; Günther, Brit. Mus. Catal. Fish., ii, 1860, p. 427; Day, Proc. Zool. Soc., 1865, p. 24; id., Fish. Malabar, 1865, p. 81; Klunzinger, Verh. zool.-bot. Ges. Wien, 1871, p. 453; Day, Fish. India, pt. 2, 1876, p. 214, pl. xlviii, fig. 5.

Caranx pseudopterygius Bleeker, Journ. Ind. Arch., iii, 1849, p. 71.

Decapterus kurra Bleeker, Nat. Tijds. Nederl. Ind., i, 1851, p. 358; id., ibid., ii, 1851, p. 213; id., Verh. Batav. Gen., xxiv, 1852, Makreel., p. 50; id., ibid., xxv, 1853, Bengal, p. 44; id., Nat. Tijds. Nederl. Ind., viii, 1855, p. 203; id., Act. Soc. Sci. Indo-Neerl., viii, 1860, Celebes, p. 39; Jordan & Richardson, Check-List. Fish. Philipp. Archip., 1910, p. 19.

Caranx ecclipsifer de Vis, Proc. Linn. Soc. N. S. Wales, ix, pt. 3, 29 Nov., 1884, p. 541.

Decapterus russelli Jordan and Snyder, Proc. U. S. Nat. Mus., xxiii, 1901, p. 352; Steindachner, Denk. Akad. Wien, lxxi, 1902, p. 20; Smith and Pope, Proc. U. S. Nat. Mus. xxxi, 1907, p. 465.

Decapterus ? ecclipsifer Ogilby, Proc. Roy. Soc. Queensl., xxiii, 1911, p. 9.

Decapterus russellii Ogilby, Mem. Queensl. Mus., ii, 1914, p. 90.

RUSSELL'S MACKEREL-SCAD.

(Plate XIX.)

Type localities:—Red Sea at El Tor (*C. russellii*).
Vizagapatam (*C. kurra*).
Celebes (*C. pseudopterygius*).
Cape York, N.Q. (*C. ecclipsifer*).

Body elongate-elliptical and subfusiform, the dorsal and ventral contours symmetrical, its width 1·3 to 1·5 in its depth, which is 4·45 to 4·9 in its length and 1·3 to 1·45 in the length of the head; abdominal region long, 1·2 in the length of the anal, including the free ray; caudal peduncle about one eighth wider than deep, its width 1·67 in the eye-diameter. Head bluntly trigonal, its upper profile feebly convex and gently acclivous, its length 3·35 to 3·45 in that of the body, its width 1·2 to 1·3 in its depth, which is 1·55 to 1·7 in its length; cranio-nuchal keel moderately developed. Eye large, with a well developed adipose lid, which overlaps the pupil both in front and behind, its diameter 3·65 to

3·75 in the length of the head and 1·33 in that of the snout; interorbital region convex, its width 1·15 in the eye-diameter. Lower jaw projecting; maxillary strongly dilated, not quite extending to the vertical from the anterior border of the eye, its length 2·85 to 3 in that of the head, the width of its concave distal extremity one fourth to two fifths more than its distance from the eye and 2·33 to 2.4 in the eye-diameter. Angle of preopercle feebly crenulate.

Teeth in the jaws minute, forming a villiform patch anteriorly but reduced to a single series laterally; a diamond-shaped patch of larger teeth on the head of the vomer, the lateral angles of which are somewhat produced, and which is followed on the shaft by a single series of decreasent teeth; palatines and tongue each with a narrow band of villiform teeth.

Cheeks, postorbital and parietal regions, and upper part of opercle wholly, occiput and interorbital region partly scaly, the two latter with three naked bands, a median extending from between the nostrils to the nape, and a lateral pair each extending from behind a nostril to the occiput, where it bifurcates, the outer branch bent downwards across the parietal to finally merge in the lateral line, the inner, which is again divided, uniting with the median band where it enters the occiput and again at its tip; each band and its branches carries a pinnated mucous canal. Lateral line forming a long shallow curve to below the 11th or 12th dorsal ray, the curved section about one fourth longer than the straight, which is armed with 32 or 33 moderately strong keeled scutes, the widest about 1·9 in the eye-diameter.

Dorsal fin with viii, i 31 i rays, originating above the basal fourth of the appressed pectoral; procumbent spine small, concealed; spinous dorsal high, the spines flexible, the 3rd longest, half the length of the head. Soft dorsal originating a little nearer to the root of the caudal than to the tip of the snout, the anterior seven rays graduated and but little produced, the 1st ray 1·3 to 1·4 in the longest spine and 8·9 to 9·5 in the body-length; pinnula much longer than the last connected ray and split to its base. Caudal fin small and widely forked, the lobes obtusely pointed, its length 5·25 in that of the body. Anal with ii, i 25 to 27 rays, originating below the 6th or 7th dorsal ray; free spines strong, 1st the longer, 1·67 to 2·1 in the eye-diameter and 2 to 2·2 in the longest ray, which is 2·8 to 3·1 in the length of the head; pinnula similar to that of the dorsal. Pectoral with 21 to 23 rays, its length 3·8 to 4·1 in that of the body; 5th ray longest, extending to above or slightly beyond the vent. Ventral moderate, 1·9 to 2 in the length of the pectoral and 2·2 to 2·3 in that of the head; 2nd ray longest, reaching midway to the base of the 1st free spine.

Gill-rakers slender and moderately long, 5 + 31 or 32 on the anterior arch, the longest 1·35 in the gill-fringes and 6·75 to 7 in the length of the head. Vent close to the free anal spines, its distance from the anal 3·1 to 3·5 in that from the origin of the ventral.

Upper surface dark blue to glaueous, shading harmoniously on the sides into the irideseent silver of the breast and abdomen; axillary spot absent or small, but the hinder base of the peetoral blackish. Snout, anterior part and edges of interorbital region and borders of eranial grooves blackish; a blaek opereular spot. Fins hyaline, the soft dorsal, eaudal, and peetorals stained with yellow. (Named after Dr. Patriek Russell, an early student of Indian iehthyology and author of the "Fishes of Vizagapatam.")

Deseribed from two specimens, eaeh 245 millim. long, one of whieh was eolleeted at Darnley Island by Dr. J. R. Tosh and presented by him to the Queensland Museum, the other the property of the Amateur Fishermen's Assoeiation of Queensland, by whom it, along with others hereafter mentioned, was kindly lent to us for the purpose of this Review; it was taken by hook in Moreton Bay.

Historical:—The earliest notice of this fish is to be found in Russell's "Fishes of Vizagapatam," where it is described and figured under a native name, which is variously spelt "Wodagawah" and "Wodagahwah." Of his description and figure little need be said, exeept that he failed to find the seales on the sides of the head, the 7th branchiostegal ray, and the lingual teeth, while the figure is much too deep. From Russell's time nothing was heard of the speeies until 1828, when Rüppell elaimed to have obtained a single example from El Tor, a town on the Red Sea littoral near Mount Sinai, which he described in his Atlas under the name here adopted. Five years later Valenciennes, though well aware of Rüppell's action and though he had never seen a specimen of the fish, gave a new name to Russell's figure, and until lately this name has been in general use. Bleeker in 1849 again described it as new from Celebes; two years later he selected it by its Valenciennean name as the type of his new genus *Decapterus*. In his description of *D. kurra* he makes no mention of the dentition, but Günther in 1860 follows Russell in asserting that the tongue is edentulous; he had, however, only a half-grown example in such bad condition that his deseription, with the exception of the part dealing with the dentition, is a translation of Bleeker's, while the dentition itself may well have been copied from Russell. Be this as it may Day is certainly correct in stating that there is a band of teeth along the middle of the tongue as deseribed above. Finally, in 1884, the first example recorded from Australian waters was deseribed as new from Cape York by de Vis.

Range:—From the Red Sea through those of India and the Malay Arehipelago to Eastern Queensland. With us in South Queensland it is eertainly searee, but we have handled two examples from Moreton Bay, the one, above referred to, caught by Mr. Chris. Dahl, the other by Mr. Matt. Colelough. The only other Queensland localities are Cape York and Darnley Island, the latter being at present the limit of its easterly range. From Malaysia Bleeker obtained it at Ternate, Celebes, and Java, while American collectors have extended its

range through the Philippines northward to Southern Japan. Its westerly limit has already been stated, but it may be mentioned that Steindachner's specimen came from Socotra.

Dimensions:—On the Indian Coast Day reports it as being "a small species attaining six or seven inches in length," and adds that "it arrives in Madras about October." Bleeker's largest specimen was under eight inches (195 millim), but on our coast it grows to at least 245 millim.

Remarks:—Our two specimens agree perfectly with Bleeker's description and, therefore, omitting his faulty dentition, with Günther's. There are, however, some discrepancies between Day's description and ours, chiefly with regard to the proportional size of various parts of the head; for instance, the depth of the head is said by him to be "four fifths of its length," while in both of ours it is, excluding the throat, exactly two thirds of its length; again the eye is smaller in proportion to the head in his specimens than in ours, although the latter are the larger fishes, a reversal of normal conditions, nevertheless it is said to be as long as the snout. McCulloch has, however, kindly compared our Darnley Island specimen with an Endeavour fish from Bustard Bay, and with Indian specimens in the Australian Museum, and writes that "the only difference appears to be in the dorsal and anal fins, the Australian specimens having two more rays in each than the Indian ones." *Caranx ecclipsifer* de Vis is certainly this fish, but, as is too often the case with that writer's specimens, the type is missing.

Illustration:—Our figure is taken from the Darnley Island specimen mentioned above. Reg No. in the Queensland Museum, I. 13/998.

ALEPES KALLA (Cuvier and Valenciennes).

Caranx kalla Cuvier & Valenciennes, Hist. Nat. Poiss., ix, 1833, p. 49; Day, Fish. Malabar, 1865, p. 83; id., Fish. India, pt. 2, 1876, p. 219, pl. xlix, fig. 5.

Selar kalla Bleeker, Verh. Batav. Gen., xxv, 1853, Bengal, p. 44.

Caranx calla Günther, Brit. Mus. Catal. Fish., ii, 1860, p. 433; Bleeker, Nederl. Tijds. Dierk., iv, 1873, p. 131; Macleay, Proc. Linn. Soc. N. S. Wales, iv, 1879, p. 63; Jordan & Richardson, Bull. U. S. Bur. Fisher., xxvii, 1908, p. 250; idd., Check-List Philipp. Fish., 1910, p. 20.

Micropteryx queenslandiæ de Vis, Proc. Linn. Soc. N. S. Wales, ix, pt. 3, 29 Nov. 1884, p. 541.

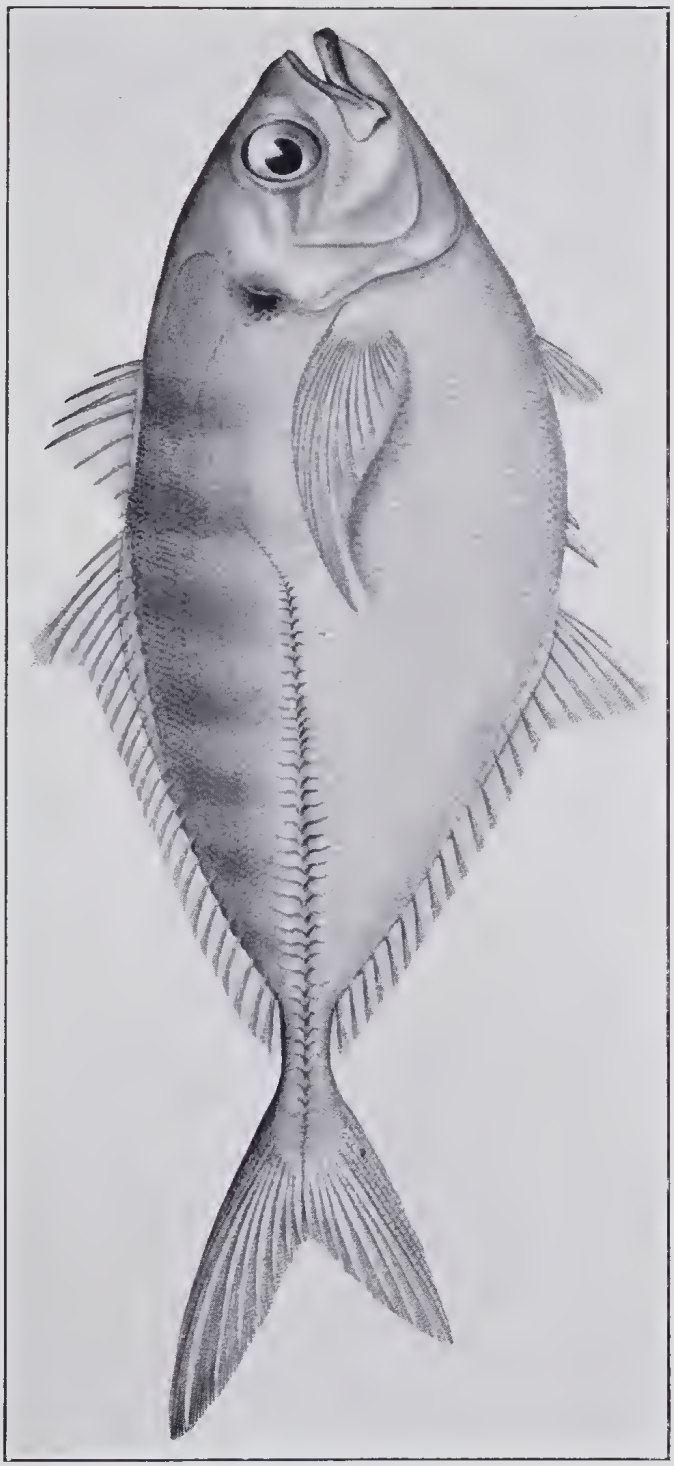
Caranx nigripinnis Jordan & Seale, Bull. U. S. Bur. Fisher., xxvi, 1907, p. 14. Not of Day.

HERRING TREVALLY.

(Plate XX.)

Type localities:—Pondicherry (*C. kalla*).
Coast of Queensland (*M. queenslandiæ*).

Body ovate, tapering posteriorly, the ventral contour much more arched than the dorsal, which is gently rounded from the occiput to the pedunele, that



ALEPES KALLA (Cuvier & Valenciennes). Nat. Size.

Phyllis Clarke, del.

Face page 62.

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of the ventral being strongly convex and bluntly cultriform between the isthmus and the anal fin; width of body 2·8 to 3 in its depth, which is 2·33 to 2·5[5] in its length and three fifths to three fourths more than the length of the head; abdominal region short, its length 1·65 to 1·8 in that of the anal; caudal peduncle very slender, considerably deeper than wide, its width 2·25 to 2·5 in the eye-diameter. Head small, its upper profile moderately acclivous, evenly convex in small examples, becoming linear with increasing age, its length 3·95 to 4·1 in that of the body, its width 1·7 to 1·85 in its depth, which is subequal to its length; cranio-nuchal keel inconspicuous. Snout short and blunt, its length 1·33 to 1·45 in the eye-diameter, which is 2·8 to 2·95 in the length of the head; adipose lid narrow in front, moderately developed but not reaching the pupil behind; interorbital region low and gently convex, its width 1·15 to 1·25 in the eye-diameter. Jaws subequal in small examples, the lower prominent in the larger; maxillary extending to below the anterior border of the pupil, its length 2·4 to 2·45 in that of the head, the width of its convex distal extremity 1·8 to 2·1 times its distance from the eye and 2·15 to 2·25 in the eye-diameter. Preopercular border entire.

Jaws with a single series of small conical teeth; similar teeth in a triangular patch on the head of the vomer, in a narrow band on the palatines, and in a broader band on the tongue.

Entire body except the nuchal ridge covered with rather large conspicuous scales; cheeks and temples scaly, the rest of the head naked; preopercle crossed by numerous simple or bifid mucous canals; nuchal canal conspicuous and pinnated, extending to the procumbent spine. Lateral line forming a short and rather high curve to below the 4th or 5th dorsal ray, the length of the curved section 1·8 to 1·95 in that of the straight, which is armed throughout with 41 to 45 wide keeled scales, the widest 1·1 to 1·25 in the eye-diameter.

Dorsal fin with viii, i 25 or 26 rays[6]; spinous dorsal moderate, originating behind the pectoral-base, procumbent spine small and concealed; spines weak and flexible, the 3rd longest, 2·15 to 2·25 in the length of the head. Soft dorsal originating one fourth nearer to the tip of the snout than to the root of the caudal, the anterior six rays graduated and but little produced, the 1st longest, about two fifths longer than the 3rd spine, 6·25 to 6·6 in the body-length, and extending when depressed to the 9th ray; last ray not produced. Caudal fin deeply and rather widely forked, the upper lobe the longer, its length 3·4 to 3·67 in that of the body. Anal fin with ii, i 21 or 22 rays, originating below the 4th dorsal ray[7]; free spines well developed, the 2nd much the longer, 1·3 to 1·5 in the eye-diameter and 1·9 to 2·1 in the 1st ray, which is 2 to 2·1 in the length of the head. Pectoral with 21 rays, its length 3·45 to 3·15 in that of the body and from one fifth to two sevenths more than the length of the head; 5th ray longest,

[5] Writing of 43 examples McCulloch says—"they vary greatly in depth, two specimens of equal size being 2.4 and 2.8 in length."

[6] As has been remarked elsewhere there is a tendency among Australian specimens towards an increase in the number of dorsal and anal rays.

[7] In Day's figure the soft dorsal and anal originate opposite one another.

reaching to above the 5th or 6th anal ray. Ventral small and rounded, 2·66 to 3·2 in the length of the pectoral and 9·2 to 10·1 in that of the body; 2nd ray longest, reaching the vent.

Gill-rakers long and slender, 8 to 6 + 28 to 30 on the anterior arch, the longest 1·2 in the gill-fringes and 5·5 in the length of the head. Vent one half nearer to the origin of the ventrals than to the anal.

Blue above, shading into bronze on the upper side, the lower side and breast silvery. Upper surface of head, snout, and tip of mandible bronze; a large blackish shoulder-spot, encroaching well on the upper edge of the operele; sides and lower surface of head, a blotch on the throat, and the bases of the pectoral, ventral, and anal fins washed with dull gold. Fins hyaline, except the anterior dorsal spines and the outer ray and tip of the upper caudal lobe, which are blackish. (*kalla*; the Tamil name for this species.)[8]

Described from three specimens, measuring respectively 152, 160, and 176 millim., trawled off the Coast of Middle Queensland during the winter of 1910. The largest and smallest are in the Queensland Museum, the other in that of our Amateur Fishermen's Association, by whom it was kindly lent at our request. We have also examined the type of *Micropteryx queenslandiæ* de Vis, which is certainly this species.

Vernacular name:—There being no trivial name, local or otherwise, for this trevally, we have been obliged to coin the above, which was suggested by its extraordinary resemblance in general form to some of our species of *Sardinella.*

Historical:—The earliest notice of this singular carangid will be found in the "Histoire Naturelle des Poissons," in which Valenciennes describes it from Pondicherry, a French settlement on the Coromandel Coast of India, where it was known by the Tamil name of "*kalla paré*," or "*kalla parah*" as Day prefers to write it. Valenciennes also declares that he had seen specimens sent from Mahé on the Malabar Coast by Bélenger and Dussumier, as well as others in the Geoffroyan collection from the Red Sea; it is, however, strange, if the latter locality be correct, that it should have so entirely escaped the notice of such keen observers as Rüppell, Klunzinger, Kossmann, and other historians of that well explored area. He also mentions incidentally that Bloch's collection contained an example without locality, which was labelled *Scomber bimaculatus,* but of which no description seems to have been published. In 1851 Bleeker described as new from Batavia a closely allied species, to which he gave the name *Selar brevis,* and which is said to differ from *S. kalla* principally in having the dorsal and ventral contours symmetrical and the curve of the lateral line shorter, terminating below instead of well behind the origin of the soft dorsal. Günther in 1860 accepted this species as valid, but Day, sixteen years later, challenged its validity, referring it as a synonym to *S. kalla.* Apparently, however, Jordan, Richardson, and Seale, having examined specimens of both forms from the Philippines, have convinced themselves of their specific value, and we,

[8] McCulloch (*in lit.*) remarks—"a few specimens retain traces of about six vertical bars from the back downwards.

therefore, follow them in keeping the species separate. It remains, then, to discuss the status of the two Valenciennean species *Caranx para* and *C. cambon*. Günther characteristically evades the responsibility by relegating them to the unattached list, but Day suggests that they may be identical with *C. kalla*, and it must be allowed that an examination of Valenciennes' descriptions favours the suggestion.[9]

Range:—Seas of India, China, and Malaysia, eastward to the Coast of Queensland and perhaps to the Solomon Islands; it was also reported to have been taken in the Red Sea during the early part of the last century, but there has been no subsequent confirmation of the report, which must, therefore, be considered doubtful. It is not included in Surgeon-Major Jayakar's collections made at Maskat, on the Arabian shore of the Gulf of Oman.[10] Nor is it much in evidence in our home waters, de Vis' specimen in fact, which formed the type of his *Micropteryx queenslandiæ*, being for twenty-six years unique; this specimen bears all the marks of Broadbent's collecting, and is, therefore, certain to have come from either Cairns or Somerset. In 1910, the "Endeavour" was, however, so fortunate as to come across it on two separate occasions during its second trip along the Queensland coast; firstly, off Pine Peak, where 46 examples were trawled on mud at a depth of 25 fathoms, and secondly, in Edgecumbe Bay, the trawl on this occasion accounting for 6 specimens taken on fine sand and mud in 14 fathoms. Passing to the north-east Macleay recorded it doubtfully from the Solomon Islands, but it is not included in Jordan and Seale's list of the Pacific Islands' Fishes. Turning now to the west we are confronted with the curious fact that, while the American collectors found it to be not uncommon at the Philippines, neither Bleeker nor Cantor ever received it from any part of the Malay Archipelago, though the former knew it from Bengal. The British Museum, however, possesses a specimen from Sumatra and another from the Moluccas, besides several from the Chinese Coast. It is generally distributed along the eastern shores of India and round Ceylon, but to the westward we have no evidence of its presence beyond the Malabar Coast.

As regards the Archipelago the identification of *C. para* and *C. cambon* with our species at once relieves the situation, for Bleeker claims to have received

[9] If this be correct the synonymy will have to be amended by the addition of the following:—

Caranx para Cuvier & Valenciennes, p. 58; Bleeker, Nederl. Tijds. Dierk., ii, 1865, p. 173; Day, Fish. Malabar, 1865, p. 85.

Caranx cambon Cuvier & Valenciennes, ibid., p. 60; Bleeker, Nat. en Geneesk. Arch. Ned. Ind. ii, 1845, p. 517; id., Verh. Batav. Gen., xxii, 1849, Madura, p. 4; id., ibid., xxiii, 1850, Mid. en Oost Java, p. 8.

Selar para Bleeker, ibid., xxiv, 1852, Makreel., p. 56; id., ibid., xxv, 1853, Bengal, p. 44; id., Nat. Tijds. Nederl. Ind., xii, 1856, p. 214; id., ibid., xvi, 1858, p. 407; id., ibid., xviii, 1859, p. 367; id., Act. Soc. Sci. Indo-Neerl., viii, 1860, Sumatra, p. 30 & Celebes, p. 39.

Type localities:—Malabar Coast (*C. para*); Batavia (*C. cambon*).

[10] See Boulenger, Proc. Zool. Soc. London, 1887, pp. 653 to 667; ibid., 1889, pp. 236 to 246, and ibid., 1892, pp. 134 to 136.

them respectively from Sumatra, Nias, Singapore, Banca, Java, and Celebes (*para*) and Java and Madura (*cambon*).

Dimensions:—It is rather difficult to say to what size this species really grows; of the 52 examples obtained by the "Endeavour" the largest does not exceed 190 millim. Valenciennes notes the length of his specimens as to about 300 millim., while Day complicates the matter by stating in 1865 that it attains a length of over 600 millim., but eleven years later reduces that measurement by two thirds, without making any explanation of the discrepancy. Probably Valenciennes' computation may be taken as the most correct.

Illustration:—Taken from a Queensland specimen, 182 millim. in length, now in the State Museum. Reg No. I. 14/2233.

CARANX (Commerson MS.) Lacépède.

Caranx (Commerson MS.) Lacépède, Hist. Nat. Poiss., iii, 1802, p. 57 (*speciosus*).
Gnathanodon Bleeker, Nat. Tijds. Nederl. Ind., i, 1851, p. 352 (*speciosus*).
Hypocaranx Klunzinger, Fisch. Roth. Meer., 1884, p. 93 (*speciosus*).

Body subovate to ovate, compressed. Scales small and cycloid, covering the whole body except the nuchal ridge. Lateral line with a long and gentle curve, the scutes few and weak. Head rather large, compressed, with convex profile and long rounded snout, the cheeks, temples, and occiput mostly scaly. Mouth terminal, protractile, with moderate oblique cleft, the upper jaw the longer; maxillary rather short, dilated distally, its upper edge covered by the membranous border of the preorbital; supplemental bone well developed. Young with minute teeth, which wholly disappear with age. Nostrils small and contiguous. Eyes small, lateral, median, the adipose lid little developed. Preopercle entire, the border membranous. Spinous dorsal low, with 8 feeble spines, some of which are absorbed in the adult; soft dorsal and anal with moderate equal lobes, the former with 18 to 21, the latter with 15 to 17 soft rays; anal spines small. Caudal deeply and widely forked. Pectoral long and falcate, with 22 rays. Ventrals moderate, originating below lower angle of pectoral-base. Gill-rakers well developed and rather stout, in moderate number. (From the French name "*carangue*," which is said to be a corruption of the Portuguese "*acarauna.*")[11]

Fishes of moderate size, inhabiting the warmer waters of the Indian and Pacific Oceans. Two, perhaps three, species recognisable.

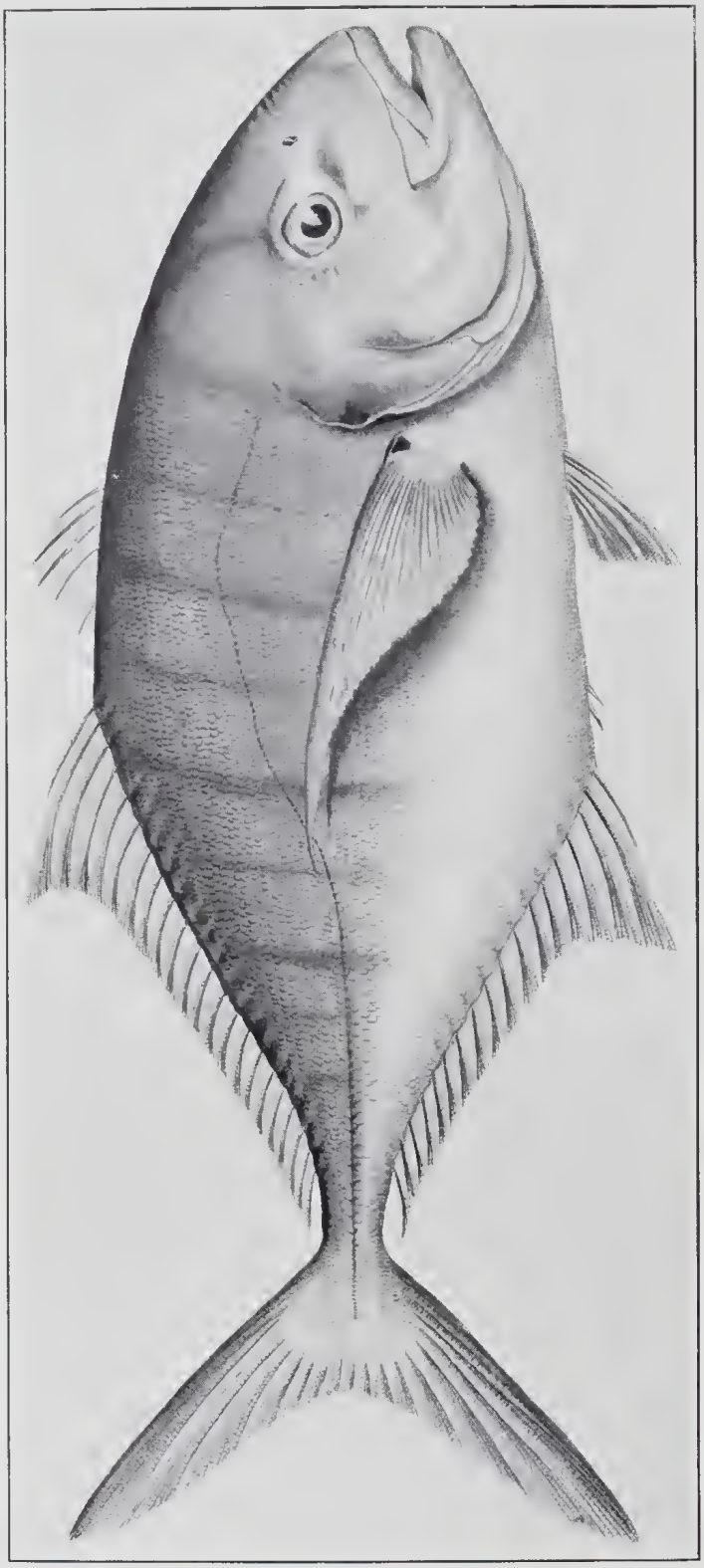
The main differences between *C. rüppellii* and *C. speciosus* are as follow:—

a^1. Head about 4 in total length; maxillary extending to below anterior border of eye or not quite so far .. .. *speciosus.*

a^2. Head about 5.67 in total length; maxillary extending to below or beyond middle of eye .. .. *rüppellii.*[12]

[11] Similarly our vernacular name "trevally" is undoubtedly a corruption of the Spanish "crevallé."

[12] Günther, Brit. Mvs. Catal. Fish., ii, 1860, p. 445 = *C. petaurista* Rüppell, Atlas Fisch. Roth. Meer., 1828, p. 95, pl. xxv, fig. 2. Not of Geoffroy.



CARANX SPECIOSUS (Forskal). $\frac{3}{4}$ Nat. Size.

Phyllis Clarke, del.

The latter species should be diligently sought for in other waters than the Red Sea whence both it and *C. speciosus* were originally described, for it seems incredible that of two so closely allied species, one should have elected to remain permanently in its narrow home waters, while the other, with no visible superiority in its favour, has succeeded in spreading over two oceans.

CARANX SPECIOSUS (Forskal).

Scomber speciosus Forskal, Deser. Anim., 1775, p. 54; Bonnaterre, Encycl. Méth., Ichth., 1788, p. 143; Gmelin, Linnæus, Syst. Nat., ed. 13, i, 1789, p. 1332; Shaw, Gen. Zool., iv, 1804, p. 603.

Caranx speciosus (Commerson MS.) Lacépède, Hist. Nat. Poiss., iii, 1802, p. 72, pl. i, fig. 1; Cuvier & Valenciennes, Hist. Nat. Poiss., ix, 1833, p. 130; Bleeker, Nat. en Geneesk. Arch. Nederl. Ind., ii, 1845, p. 517; Richardson, Zool. Erebus & Terror, ii, 1848, Ichth., p. 136; Bleeker, Verh. Batav. Gen., xxii, 1849, Madura, p. 4; id., ibid., xxiii, 1850, Mid. en Oost Java, p. 8; Cantor, Catal. Malayan Fish., 1850, p. 133; Jerdon, Madras. Journ. Lit. & Sci., 1851, p. 137; Peters, Arch. f. Nat., 1855, i, p. 245; Günther, Brit. Mus. Catal. Fish., ii, 1860, p. 444; Day, Fish. Malabar, 1865, p. 84; id., Proc. Zool. Soc. London, 1865, p. 25; Playfair, Proc. Zool. Soc. London, 1867, p. 860; Günther, Trans. Zool. Soc. London, vi, 1869, p. 431; Day, Proc. Zool. Soc. London, 1870, p. 689; Klunzinger, Verh. zool.-bot. Ges. Wien, 1871, p. 455; id., Sitz. Akad. Wien, lxxx, i, 1879, p. 377; Macleay, Proc. Linn. Soc. N. S. Wales, v, 1881, p. 535; id., ibid., vii, 1882, p. 356; Jordan & Gilbert, Proc. U. S. Nat. Mus., v, 1882, p. 375; Boulenger, Proc. Zool. Soc. London, 1887, p. 661; id., 1889, p. 240; Jordan & Evermann, Amer. Food & Game Fish., 1902, p. 308; Jenkins, Bull. U. S. Fish. Comm., xxii, 1903, p. 447; Snyder, Bull. U. S. Fish. Comm., xxii, 1904, p. 525; Jordan & Evermann, Bull. U. S. Fish Comm., xxiii, pt. 1, 1905, p. 197; Waite, Rec. Austr. Mus., vi, 1905, p. 71; Jordan and Seale, Bull. U. S. Bur. Fish., xxv, 1906, p. 232; idd., ibid., xxvi, 1907, p. 14; Seale & Bean, Proc. U. S. Nat. Mus., xxxiii, 1908, p. 241; Jordan & Richardson, Mem. Carnegie Mus., iv, No. 4, 1909, p. 179.

Poloosoo Parah Russell, Fish. Vizagapatam, ii, 1803, p. 36, pl. cxlix.

Caranx petaurista I. Geoffroy, Deser. Egypt, 1809, Poiss., p. 325, pl. xxiii, fig. 1.

Zonichthys subcarinata Swainson, Nat. Hist. Fish., ii, 1839, p. 248.

Caranx poloosoo Richardson, ibid., pl. lviii, figs. 4, 5.

Gnathanodon speciosus Bleeker, Nat. Tijds. Nederl. Ind., i, 1851, p. 160; id., ibid., ii, 1851, p. 471; id., ibid., iii, 1852, pp. 57, 236, 445; id., Verh. Batav. Gen., xxiv, 1852, Makreel., p. 72; id., ibid., xxv, 1853, Bengal, p. 46; id., Verh. Akad. Amsterdam, ii, 1855, van Diemensland, p. 10; id., Nat. Tijds. Nederl. Ind., viii, 1855, p. 344; id., ibid., xv, 1858, pp. 200, 223; id., ibid., xvi, 1859, p. 317; id., Act. Soc. Sci. Indo-Neerl., viii, 1860, Sumatra 1, p. 30 & 2, p. 2, Celebes, p. 40; id., Nat. Tijds. Nederl. Ind., xxii, 1861, p. 65; id., Versl. Akad. Amsterdam, xii, 1861, p. 74; id., Nederl. Tijds. Dierk., i, 1863, p. 235; id., ibid., ii, 1865, pp. 191, 290; id., Versl. Akad. Amsterdam (2) ii, 1868, pp. 293, 300; id., in Pollen & van Dam, Faun. Madagascar, pt. 4, 1875, Poiss., p. 99; id., Verh. Akad. Amsterdam, xviii, 1879, Ile Maurice, p. 18; Jordan & Evermann, Fish. North & Mid. Amer., pt. 1, 1896, p. 928; Jordan & Richardson, Check-List Fish. Philipp. Archip., 1910, p. 21.

Caranx panamensis Gill, Proc. Acad. Nat. Sci. Phila., 1863, p. 166.

Caranx edentulus Alleyne & Macleay, Proc. Linn. Soc. N. S. Wales, i, pt. 4, Mar. 1877, p. 327, pl. xi, fig. 2.

Caranx obtusiceps Macleay, Proc. Linn. Soc. N. S. Wales, vii, pt. 3, 1882, p. 357.

Caranx (Hypocaranx) speciosus Klunzinger, Fisch. Roth. Meer., 1884, p. 96, Steindachner, Denk. Akad. Wien, lxx, 1900, p. 495.

Caranx cives de Vis, Proc. Linn. Soc. N. S. Wales, ix, pt. 3, 29 Nov. 1884, p. 540.

KING TREVALLY.

GOLDEN TREVALLY; BANDED TREVALLY.

(Plate XXI.)

Type localities:—Red Sea at Jeddah (*S. speciosus*).
Red Sea at Jeddah (*S. rim*).
Red Sea at Suez (*C. petaurista*).
Australia (*C. poloosoo*).
Pacific Coast of Panama (*C. panamensis*).
Percy Islands, M.Q. (*C. edentulus*).
Port Moresby, B.N.G. (*C. obtusiceps*).
Coast of North Queensland (*C. circs*).

Dorsal contour of body evenly rounded and more elevated than the ventral, which is sublinear and gently declivous between the throat and the origin of the anal fin, beyond which it is symmetrically acclivous; width of body 2·66 to 2 in its depth, which is 2·9 to 2·4 in its length and one eighth to one third more than the length of the head; abdominal region rather long, its length 1·4 to 1·55 in that of the anal; caudal peduncle from one half to one twelfth deeper than wide, its width 2·55 to 1·25 in the eye-diameter. Head large, with evenly convex upper profile, its length 3·35 to 3·15 in that of the body; width of head 2 to 1·8 in its depth, which is 1·2 to 1·05 in its length; cranio-nuchal keel moderately trenchant in the young, inconspicuous in the adult. Diameter of eye 3·6 to 5·4 in the length of the head, 1·33 to 2·25 in that of the snout, and 1·05 to 1·85 in the elevated and sharply convex interorbital width, the adipose lid not nearly reaching the pupil in front or behind. Mandible extending to below the anterior border of the pupil in the young, of the eye in the adult; maxillary rather shorter, its length 2·7 to 2·5 in that of the head, the width of its truncate or rounded distal extremity from one fourth more in the young to three fifths less in the adult than its distance from the eye and 2·05 to 1·55 in the eye-diameter. Angle of preopercle feebly crenulate.

No teeth, at least in the adult.[13]

[13] Day (1) remarks—"In young specimens several rows of villiform teeth in upper jaw, with an external row of strong ones; a single row of irregularly sized ones in the lower jaw; small and villiform on vomer and palate." This is practically the adult dentition of *Carangus* Griffith, which should, therefore, be closely associated with *Caranx* in the generic sequence. Richardson and Cantor also describe these teeth, the latter hazarding the statement that they have become imperceptible by the time the fish has attained a length of 90 millim. In our smallest example we can nowhere detect any teeth, thus corroborating Cantor's statement, nevertheless the sun-dried tongue of a large specimen is densely clothed with minute acicular teeth.

Posterior half of preorbital with some deeply imbedded mostly non-imbricate scales; middle portion of cheek, postorbital region, upper edge of opercle, and occiput scaly, the latter extending forward on the sides to above the middle of the eye; rest of the head and a gradually decreasing stripe along the occipital and nuchal ridges naked in the adult; scaly area much restricted in the young; preorbital and preopercle crossed by indistinct mucous canals; nuchal canal more conspicuous, extending among the scales to below the middle of the spinous dorsal. Lateral line moderately curved to below the eighth dorsal ray, the length of the curved section equal to one fifth less than that of the straight, which is weakly armed posteriorly with 10 to 18 feeble scutes, which increase in size and strength with age; widest scute in the adult about one third of the eye-diameter.

Dorsal fin with viii to v, i 19 to 21 rays; spinous dorsal small, originating a little behind the pectoral-base; procumbent spine exposed in the young only; spines feeble, the 2nd longest 2·55 to 3·45 in the length of the head, the three last becoming isolated and finally absorbed with increasing age. Soft dorsal originating a little nearer to the root of the caudal than to the tip of the snout, the anterior rays produced as a low falciform lobe, its height 7·8 to 6 in the length of the body, and extending when depressed to the 10th ray; last ray slightly produced. Caudal fin widely forked, the lobes equal, 4 to 3.4 in the length of the body. Anal fin with ii, i 16 or 17 rays, originating below the 6th or 7th dorsal ray; free spines short, the second the longer, 2·6 to 1·9 in the eye-diameter and 4 to 5·2 in the 1st ray, which is 2.33 to 2 in the length of the head, and extends when depressed to the 9th ray. Pectoral with 21 or 22 rays, its length 3·85 to 2·6 in that of the body, and from one seventh less to one fifth more than the length of the head, the 4th and 5th rays longest, extending in the young to above the origin, in the adult to above the 7th or 8th ray, of the anal. Ventral moderate, its length 2 to 2·8 in that of the pectoral and 8 to 7·25 in that of the body, the 1st ray a little the longest extending to a little beyond the vent.

Gill-rakers 19 to 21 on the lower branch of the anterior arch, the longest from one fifth more than to as long as the fringes and 5·2 to 7·4 in the length of the head. Vent situated from one sixth nearer to the anal than to the origin of the ventral in the young to one eighth nearer to the origin of the ventral than to the anal in the adult.

Coloration:—(*Young*): Golden, with ten or twelve alternately wide and narrow black cross-bands, which do not quite reach to the ventral edge of the trunk, but are complete on the tail; the first band runs obliquely forwards from the occipital ridge through the eye to close behind the maxillary; the second less obliquely backwards from the nuchal ridge over the hinder border of the opercle to the base of the pectoral, below which it curves slightly forwards on the breast; the third, fourth, and fifth[14] are below the spinous dorsal and are

[14] When but ten bands are present there are two only below the spinous dorsal.

subvertical; the remaining seven run vertically from the soft dorsal to the anal; between the seven anterior bands are still narrower and less conspicuous blackish bars or chains of spots, which do not descend below the level of the pectoral; a small, mostly concealed, black axillary spot; upper surface of snout washed with bronze. Fins greenish yellow, the first dorsal clouded; tips of the caudal lobes black. (*Half-grown*): At this stage the upper surface is golden brown, shading through the sides to the pearly white of the breast and abdomen; the supplementary bars have disappeared and the principal bands have faded to a dull blue and rarely extend below the middle of the sides; the snout has also become dull blue and there is a similar blotch on the opercle, the black tips of the caudal lobes have disappeared, but the tips of all the rays inside the fork are dusky. (*Adult*): Silvery, washed above with plumbeous blue and without any trace of bands or spots, only the yellowish tinge of the fins and the dusky tips of the spinous dorsal and caudal persisting. (*speciosus*, handsome or showy.)

Described from four Queensland examples, measuring 353, 323, 261, and 124 millimeters, the largest, from Moreton Bay, belonging to the Amateur Fishermen's Association of Queensland, the remaining three in the Queensland Museum from Darnley Island, Townsville, and Southport, having been respectively presented by Dr. J. R. Tosh, Mr. F. H. Taylor, and the writer.

Vernacular names:—As both of the names, by which this species is commonly known, refer to the coloration of the young fish only, we have found it necessary to create a name, which will be suitable to the fish at all stages of growth.

Historical:—This beautiful species was originally described from specimens obtained at Jeddah, on the Arabian Coast of the Red Sea, by Forskal, to whom it was known by the Arab name *rim*,[15] which, according to Valenciennes, signifies a staircase, and was doubtless suggested by the evenly graded bands on the sides of the fish. The next knowledge of importance came from Commerçon, who left in his MSS. a detailed description as well as a figure, both of which were subsequently published by Lacépède; his specimens, two in number, were taken at Mauritius, where he left the elder Bougainville, when on his way back to France after circumnavigating the globe in the frigate "Boudeuse," 1766 to 1769. Russell's figure, published a year later than Lacépède's from an example captured on the East Coast of India, does little credit to the artist and would be irrecognisable were it not for the cross-bands.[16] Valenciennes adds little to our knowledge

[15] Being unable to consult Forskal's work I can not tell whether that author described the species twice—as *Scomber rim* and *S. speciosus*—as would appear from the synonymy given by Jordan and Evermann. No mention is made of any such species by Günther or Day, and I, therefore, follow Valenciennes in looking upon *rim* as an Arabic title only.

[16] Russell himself complicates matters by giving wrong measurements for his specimen, which, he says, was seven in. in length and three and one third in width (*i.e.* depth). The latter figure is doubtless a misprint for two and one third.

of the species, but he extends its range to Vanikoro,[17] the principal island of the Santa Cruz Group (notable as the place where the intrepid French navigator, La Perouse, met disaster and death), and New Holland, whence it was first obtained by Busseuil, the naturalist attached to the French Expedition in the "Thétis" and "Espérance" under the command of the younger Bougainville about 1825. Some time later Isidore Geoffroy St. Hilaire described the same species as new from a specimen taken at Suez. The next noteworthy feature of its history was the figuring by Richardson in 1848 of a very young specimen, measuring about 70 millim.; the transverse bands and caudal spots are well shown in this figure, but according to my observations the body is too deep and the head too large. Cantor, who followed him, gave a very accurate account of the colors of a 225 millim. example. The next year, 1851, is an interesting one in its history, for it was then Bleeker, rejecting the name *Caranx*, furnished it with a distinct generic title, *Gnathanodon*, a proceeding which, though followed by certain authors, chiefly American, is quite unnecessary, since Commerçon, the original creator of *Caranx*, directly associated the name with this fish; this, however, was entirely in accord with Bleeker's peculiar taxonomic methods. Bleeker mentions the species in no less than twenty-seven papers, but in not one of the nine to which we have access is there a description, nor need any of them concern us here save one published in 1855, in which he claims to have received a specimen from Tasmania; in this we are sure there is some error for, as we have had occasion to point out with regard to another species included therein, this trevally is a purely warm water form, and is not in any case likely, if there, to have been overlooked by such observers as Allport, Johnston, Kent, and others. Peters about the same time increased its range to Mozambique, while the next notable accession to its distribution came from the very opposite axis of its wanderings through Gill, who in 1863 described it as new from the Pacific Coast of Panama, a proceeding which was called in question some years later by Günther, who asserted the identity of *C. panamensis* with *C. speciosus*, in which opinion he was subsequently supported by Jordan and Gilbert. Meanwhile Playfair had added the Seychelles to its list. In 1877 the only definitely recorded Australian locality was Hontman's Abrolhos, W.A., referred to by Richardson but overlooked by Macleay, but in that year Alleyne and Macleay described it under a new name from the Queensland Coast, to which the junior author afterwards added Torres Strait and Port Moresby.

Uses:—Considering the large size and wide distribution of this fine fish information regarding its edible qualities is decidely meagre. Cantor dismisses it with the remark that "they are eaten by the natives," which recalls to mind Pope's famous cynicism "damned with faint praise." Beyond this there is

[17] Valenciennes, with admirable impartiality, refers to this island as Vanicolo or Vanikoro. My colleague, Mr. Douglas Ramsie, whose knowledge of the Western Pacific Islands is unequalled, assures me that they are one and the same.

absolute silence until Jordan and Evermann (1) report that it is "an excellent and valued food-fish." To its excellence we can ourselves bear witness.

Range:—Warmer parts of the Indian and Pacific Oceans. On the Queensland Coast it occurs from south to north, and has been specially recorded from Southport and Moreton Bay, S.Q. (*Ogilby*); Percy Islands, M.Q. (*Alleyne & Macleay* as *C. edentulus*); Cleveland Bay, N.Q. (*Klunzinger* and *Taylor*); Torres Strait (*Macleay*); and Darnley Island (*Tosh*). Other Australian localities are Houtman's Abrolhos (*Richardson*) and Fremantle (*Waite*), W.A. It has not yet been recorded from New South Wales, but the fact that it is by no means uncommon in Queensland waters suggests its presence on the Northern shores of the Mother State. With Tasmania's pretensions we have already dealt. Passing northward we find it recorded from Port Moresby, B.N.G., by Macleay. In the Malayan subregion, proceeding westward, Bleeker has reported it from Goram, Waigiou, Ceram, Ternate, Amboina, Celebes, Madura, Borneo, Biliton, Java, Thousand Islands, Banca, Bintang, Rio, Sunda, Singapore, Sumatra, and Tanara (which last I am unable to locate) and Cantor from Pinang. Jordan and Richardson extended its range still further north through the Philippines to Formosa; still again westward we find it inhabiting the seas of the Andamans, Ceylon, and the Indian Peninsula, and onward to the Seychelles, Mauritius, Madagascar, and Mozambique, till we finally take leave of it in this direction in the typical waters of the Red Sea. To the eastward, however, although it has forced its way through the Tropical Pacific apparently to its ultimate limit, its course is not so readily traceable; Günther makes no mention of it in the Fische der Südsee, but Jordan and Seale record it from Samoa, Fiji, and the Hawaiian Archipelago, while others report it from the Pacific Coasts of Mexico (Cape San Lucas) and Panama, but of these latter we shall have some remarks to make further on.

Dimensions:—While the largest specimen of which we have any personal knowledge measured a little under 400 millim., the species attains a much greater size on the Indian Coast, whence specimens of 840 millim. have been recorded by Günther (1), and even up to 915 millim. by Day (1).

Remarks:—According to the description given by Jordan and Evermann (3) American examples differ from ours in several important characters. For instance the eastern form is much deeper, the depth of the body being 2·33 to 2 in its length in American and Hawaiian examples as against 2·9 to 2·4 in those from Australia and westward; the rule, however, is not without exceptions in both areas, for according to Gill's description the typical *C. panamensis* belongs to the slender form, while the typical *C. obtusiceps*[18] belongs to the deeper. Again the teeth in the young of the eastern fish are said to be granular, while in ours they are villiform. Lastly the beautiful color-pattern of the caudal fin,

[18] We have to thank Mr. McCulloch for kindly verifying our identification of this species with *C. speciosus*, by an examination of Macleay's type.

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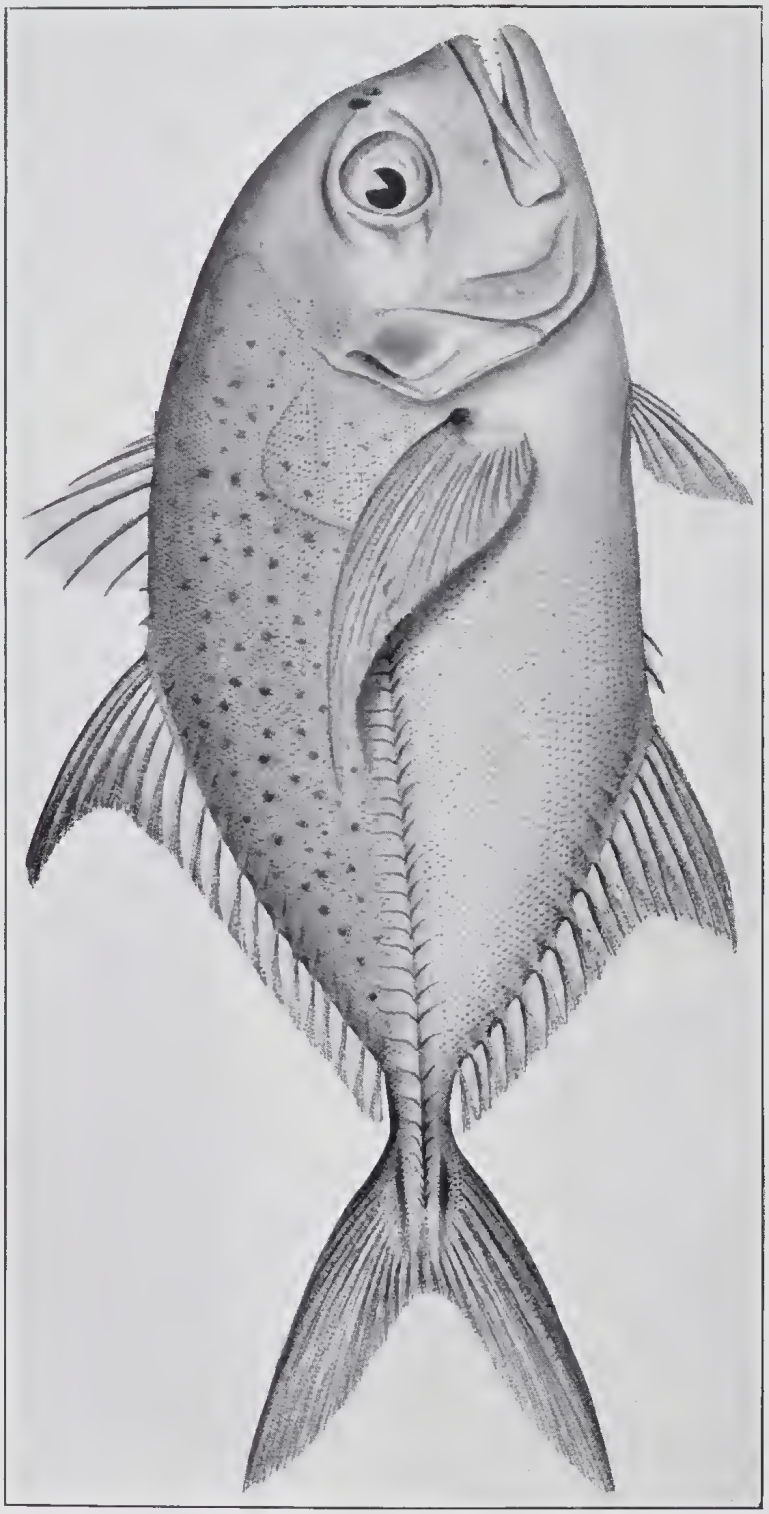

Phyllis Clarke, del CARANGUS BUCCULENTUS (Alleyne & Macleay). ⅓ Nat. Size.

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which is so conspicuous in the young of the western form, is wholly lacking in the eastern. The segregation of the two forms under a varietal nomenclature may, therefore, be advisable; they would then stand as *Caranx speciosus speciosus* (Forskal) and *C. s. obtusiceps* Macleay.

Illustration:—Our figure is taken from a Darnley Island specimen in the collection of the Queensland Museum. It measures 323 millim. and was the gift of Dr. J. R. Tosh. Reg. No. I. 13/1097.

CARANGUS BUCCULENTUS (Alleyne & Macleay).

Caranx bucculentus Alleyne & Macleay, Proc. Linn. Soc. N. S. Wales, i. pt. 4, March, 1877, p. 326, pl. xi. fig. 1: Kent, Great Barrier Reef, 1893, App. A., p. 369.

Caranx nobilis Kent, ibid., pl. xlvii, fig. 3. Not of Macleay 1881.

WIDE-MOUTHED TREVALLY.

(Plate XXII.)

Type locality:—Cape Grenville, N.Q.

Body ovate and compressed, the dorsal contour elevated and evenly rounded from the frontal region to the peduncle; ventral contour sublinear and slightly declivous from the chin to the anal, whence it rises somewhat abruptly to the peduncle; width of body 2·55 in its depth, which is 2·4 in its length and three tenths more than the length of the head; abdominal region long, its length 1·15 in that of the anal fin; depth of caudal peduncle 1·6 in its width, which is 1·25 in the eye-diameter. Head large, its length 3·1 in that of the body; width of head 1·85 in its depth, which is subequal to its length; cranio-nuchal keel little developed. Snout rather long, its profile linear and strongly acclivous to the level of the nostrils, above which there is an appreciable gibbosity, its length 3·05 in that of the head; eye large, with the adipose lid little developed, its diameter 3·8 in the length of the head and 1·25 in that of the snout; interorbital region broadly rounded, its width about one eighth more than the eye-diameter. Lower jaw projecting; maxillary extending to below the hinder border of the pupil, its length 2·75 in that of the head, the width of its distal extremity 1·5 in its distance from the eye and half of the eye-diameter. Angle of preopercle feebly crenulate.

Upper jaw with a broad band of villiform teeth and an outer row of enlarged widely set conical teeth; lower jaw with a single series of strong but rather smaller and more closely set teeth; no perceptible canines; small teeth on the vomer, palatines, pterygoids, and tongue, those of the former in a triangular patch.

Cheeks, temples, and upper edge of opercles scaly, the rest of the head, the nuchal ridge, and the breast naked; mucous canals of preorbital coarse, of preopercle fine, both rather sparsely branched; nuchal canal conspicuous,

extending into the scaly shoulder to below the procumbent spine. Lateral line strongly arched to below the 6th dorsal spine, the length of the curved section 2·6 in that of the straight, which is armed throughout with 36 strongly keeled spinigerous scutes, the widest of which are below the last third of the soft dorsal and 1·33 in the eye-diameter; some of the spines on the peduncle exceptionally strong, upright, and recurved.

Dorsal fin with viii, i 18 rays; spinous dorsal well developed, originating above the base of the pectoral; procumbent spine strong and exposed; spines flexible, the 3rd longest, 2·75 in the length of the head, the last small and isolated. Soft dorsal originating about one eighth nearer to the root of the caudal than to the tip of the snout, the anterior rays produced as a falciform lobe, its length 4·7 in that of the body and extending when depressed to the 10th ray; last ray somewhat produced. Caudal fin deeply forked, the upper lobe the longer, 3·55 in the length of the body. Anal fin with ii, i 16 rays, originating below the 7th dorsal ray; free spines well developed, the 2nd the longer, 1·95 in the eye-diameter and 4·25 in the 1st ray, which is 1·75 in the length of the head and extends when depressed to the 10th ray. Pectoral with 19 rays, its length 2·85 in that of the body and about one twelfth more than that of the head, the 5th ray longest, extending to above the 5th anal ray. Ventral moderate, its length 2·35 in that of the pectoral and 6·7 in that of the body, the outer ray longest, extending to the vent.

Gill-rakers stout and rather long, 6+20 on the anterior arch, the longest about two fifths more than the gill-fringes and 5·65 in the length of the head. Vent situated one fourth nearer to the anal than to the origin of the ventral.

Upper surface pale olive green with or without blue spots,[19] sides silvery; abdomen, breast, and lower surface of head milk-white; a well marked black axillary spot, extending downwards to cover the posterior half of the pectoral-base; a large diffused dark spot on the upper half of the opercle. Fins pale yellowish green, the anterior border and outer half of the dorsal lobe and the extremity of the upper caudal lobe darker.[20] (*bucculentus*, having a large mouth.)

Described from a single specimen, 235 millim. in length, forwarded from Townsville by Mr. F. H. Taylor, Entomologist to the Institute of Tropical Medicine, to whom we hereby return our best thanks.

Historical:—Our earliest knowledge of this species was supplied by the naturalists of the "Chevert," who collected two specimens, measuring 207 and

[19] On our specimen all the body above the level of the straight part of the lateral line is closely blue-spotted.

[20] McCulloch (*in lit.*) says—"My smallest specimen, 123 millim., has five broad, dark cross-bars descending from the back to the middle of the sides."

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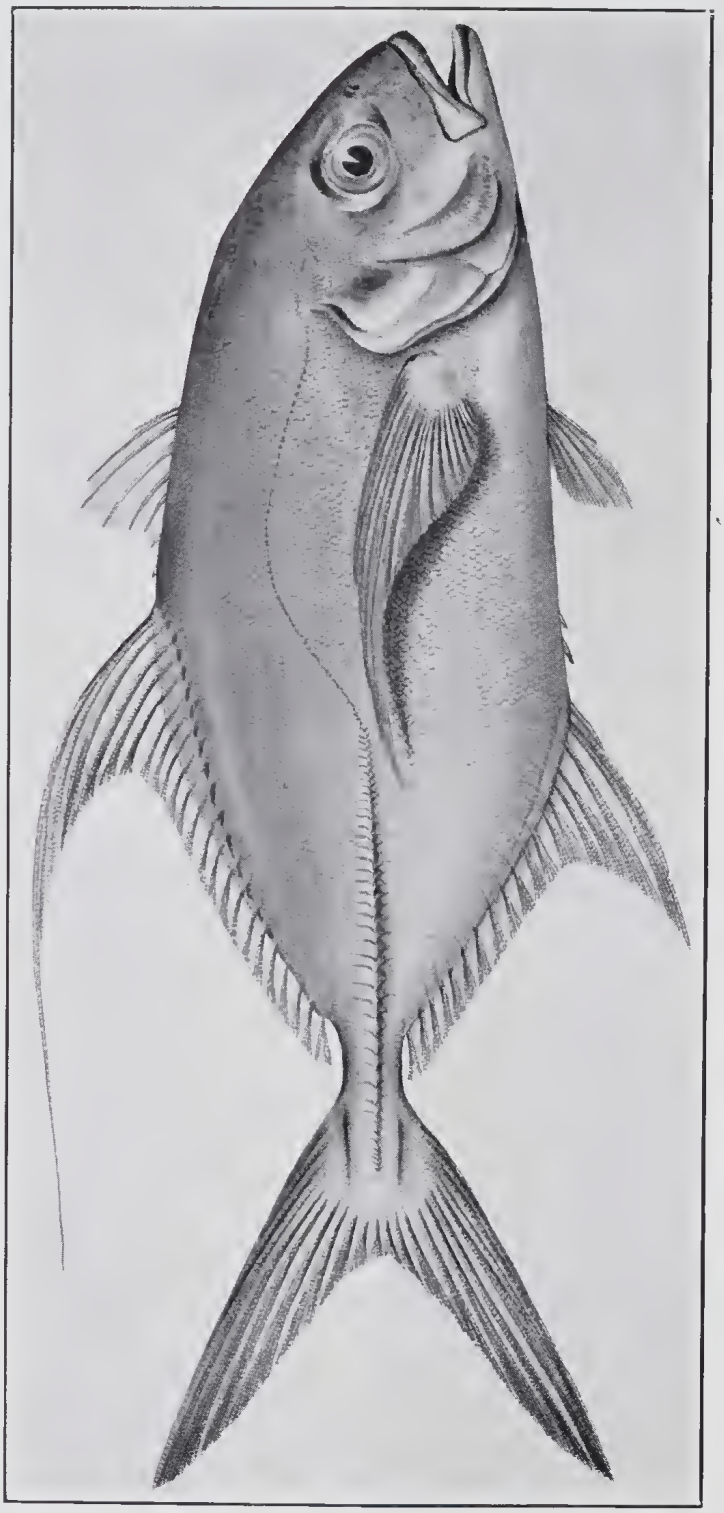

CITULA GRACILIS Ogilby. ⅔ Nat. Size.

Phyllis Clarke, del.

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222 millim. (*fide* McCulloch *in lit.*) in the neighbourhood of Cape Grenville, N.Q., in 1875, these subsequently becoming the types of Alleyne and Macleay's species. From that time until quite lately this interesting trevally was wholly lost sight of, the only reference to it between 1877 and the present time being that in Kent's "Classified List of Queensland Food Fishes,"[21] a production of which the less said the better. Nevertheless Kent, though unknowingly, must have obtained specimens somewhere on the coast, since he publishes an unmistakable photograph of it on plate xlvii of the work referred to under the name of *Caranx nobilis* Macleay, a species to which it has not the remotest resemblance. During the second cruise of the F.I.S. "Endeavour" in Queensland waters this species was met with thrice, namely, at Pine Peak[22] 21 examples, off Cape Gloucester 6, and in Edgecumbe Bay 204 on a fine sand and mud bottom at a depth of from 25 to 14 fathoms.

Range:—East Coasts of Middle and South Queensland.

Dimensions:—To at least 235 millim.

Illustration:—Taken from the Townsville example referred to above. Reg. No. I. 13/1483.

CITULA GRACILIS sp. nov.

COACH-WHIP TREVALLY.

(Plate XXIII.)

Type locality:—Darnley Island.

Body deeply elliptical and compressed, the dorsal contour much more arched than the ventral and evenly rounded from the occiput to the peduncle; ventral contour feebly rounded and declivous to the ventral fins, between which and the anal it is slightly emarginate; width of body about half its depth, which is 3·05 in its length and one fifth more than the length of the head; abdominal region rather long, its length 1·35 in that of the anal fin; depth of caudal peduncle 1·35 in its width, which equals the eye-diameter. Head rather small, its upper surface from the tip of the snout to the nape linear and moderately acclivous, its length 3·66 in that of the body; width of head 1·7 in its depth, which is 1·1 in its length; cranio-nuchal keel little developed. Eye small, its diameter 4·05 in the length of the head, 1·35 in that of the snout; adipose lid not nearly reaching the pupil in front or behind; interorbital region convex, its width a little more than the eye-diameter. Lower jaw slightly projecting; maxillary extending to below the anterior border of the pupil, its length 2·6 in that of the head, the width of its distal extremity 1·25 in its distance from the eye and 2·05 in the eye-diameter. Membranous border of preopercle finely crenulate.

[21] See "Great Barrier Reef," Appendix A, pp. 369, 370.

[22] An outlier of the Percy Islands in lat. 21.5 S.

Villiform teeth in broad bands in the jaws, the outer series somewhat enlarged and widely set, in narrower bands on the palatines and tongue, and in a triangular patch on the head of the vomer.

Cheeks, temples, and upper part of opercles scaly, the rest of the head, the nuchal ridge, and the breast naked; preorbital and preopercle crossed by numerous mucous canals; nuchal canal indistinct, not nearly reaching to the dorsal. Lateral line gently curved to below the 9th dorsal ray, the length of the curved section 1·15 in that of the straight, which is armed throughout with 38 strongly keeled spinigerous scutes, the widest on the peduncle 2·3 in the eye-diameter.

Dorsal fin vi, i 21 rays; spinous dorsal moderate, originating well behind the base of the pectoral; procumbent spine concealed; spines flexible, 3rd longest, 2·2 in the length of the head. Soft dorsal originating midway between the tip of the snout and the root of the caudal fin, the anterior ray produced as a filiform appendage, extending when depressed to the end of the proximal third of the upper caudal lobe and 1·7 in the length of the body; 2nd ray one fifth shorter than the head, those behind it gradually decreasing to the 7th; last ray slightly produced. Caudal fin deeply and widely forked, the upper lobe the longer, 2·9 in the length of the body. Anal fin with ii, i 18 rays, originating below the 9th dorsal ray; free spines short and weak, the 2nd the longer, 2·15 in the eye-diameter and 8·7 in the 1st ray, which is slightly filamentous, as long as the head, and reaches when depressed to the 16th ray. Pectoral with 21 rays, its length 2·55 in that of the body and two fifths more than that of the head; 4th ray longest, extending to above the 5th anal ray. Ventral rather small; inserted behind the pectoral-base, its length 2·7 in that of the pectoral and 1·9 in that of the head; outer ray longest, reaching midway to the 3rd anal ray.

Gill-rakers stout and of moderate length, 5+19 on the anterior arch, the longest a little shorter than the gill-fringes and 7·5 in the length of the head. Vent midway between the origin of the ventral and the second free anal spine.

Upper surface pale olive green, shading into silvery on the sides; abdomen, breast, and lower surface of head milk-white; an obscure dusky spot behind the eye and another upon the opercle, the two connected by a narrow dark blue band, which is produced backwards below the lateral line to above the middle of the pectoral. Short rays of soft dorsal tipped with lavender; upper lobe of caudal dull violet tipped with blackish, lower grayish tipped with smoky brown; other fins colorless. (*gracilis*, slender.)

Described from a single example, 290 millim. long, presented to the Queensland Museum by Dr. J. R. Tosh, who obtained it at Darnley Island.

Reg. No. of type in the Queensland Museum—I. 13/1499.

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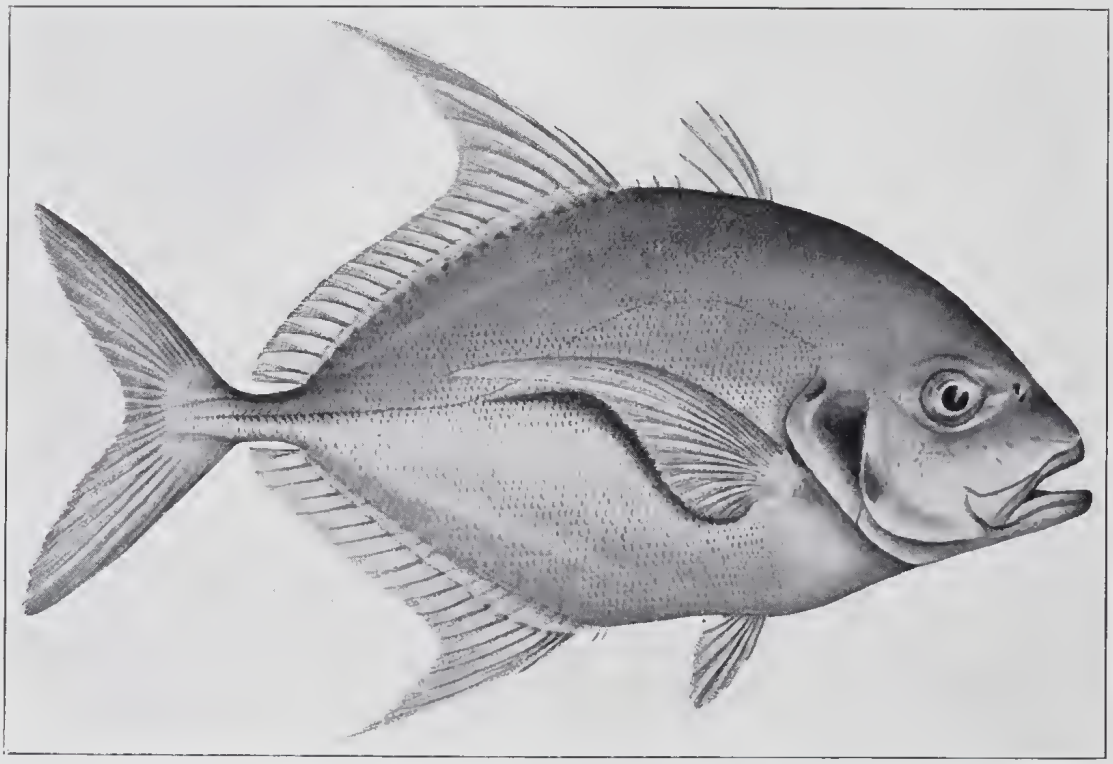

CITULA CHRYSOPHRYS (Cuvier & Valenciennes). $\frac{3}{5}$ Nat. Size.

Phyllis Clarke, del.

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CITULA CHRYSOPHRYS (Cuvier & Valenciennes).

Caranx chrysophrys Cuvier & Valenciennes, Hist. Nat. Poiss., ix. 1833, p. 77, pl. ccxlvii; Kner, Reise Novara, Fisch., pt. 2, 1865, p. 155; Boulenger, Proc. Zool. Soc. London, 1887, p. 661.

? *Caranx chrysophrys* var. *hycmalis* Richardson, Rep. Ichth. China & Japan, 1845, p. 275.

Carangoides chrysophryoides Bleeker, Nat. Tijds. Nederl. Ind., i, 1851, p. 366; id., Verh. Batav. Gen., xxiv, 1852, Makreel., p. 63.

Caranx chrysophryoides Günther, Brit. Mus. Catal. Fish., ii, 1860, p. 452 (*after Bleeker*).

Citula chrysophrys Bleeker, Nederl. Tijds. Dierk., iv, 1873, p. 132; id., in Pollen & van Dam, Faune Madagascar, pt. 4, 1875, Poiss., p. 99.

LONG-NOSED TREVALLY.

(Plate XXIV.)

Type localities:—Seychelles (*C. chrysophrys*).
Batavia (*C. chrysophryoides*).

Body ovate and strongly compressed, the dorsal contour evenly rounded and more elevated than the ventral, which is linear and moderately declivous between the tip of the mandible and the ventral fins, feebly emarginate between the ventrals and the anal, the base of which is feebly convex and more strongly acclivous; width of body 3·95 to 4·05 in its depth, which is 2 to 2·1 in its length and 1·5 to 1·67 time the length of the head; abdominal region moderate, its length 1·7 to 1·85 in that of the anal; caudal peduncle about one fourth deeper than wide, its width 2·1 to 2·25 in the eye-diameter. Head rather large, the profile linear and moderately acclivous to above the eye, the occipito-nuchal region gently convex, its width 2·35 in its length, which is equal to its depth and 3 to 3.25 in the body-length; cranio-nuchal keel well developed. Eye moderate, with the adipose lid but little developed, not nearly reaching to the pupil in front or behind, its diameter 3·4 to 3·75 in the length of the head, 1·35 in that of the snout, and a trifle more than the elevated and acutely convex interorbital width. Lower jaw slightly protruding; mandible extending to below the middle of the eye, maxillary to a little beyond its anterior border or even to below that of the pupil, its length 2·4 to 2·5 in that of the head, the width of its concave distal extremity equal to or a little less than its distance from the eye and 1·85 to 2 in the eye-diameter. Angle of preopercle moderately crenulate.

Jaws with broad bands of villiform teeth, the outer series slightly enlarged; head of vomer with an angular band of similar teeth, the shaft smooth; villiform teeth in well developed bands on the palatines; tongue toothless.

Cheeks, temples, and upper edge of opercles scaly; rest of head, a narrow stripe along each side of the nuchal ridge, and breast naked; preorbital and preopercle crossed by ramulose mucous canals; nuchal stripe with a similar canal, which does not extend to the level of the dorsal. Lateral line moderately curved to below the 13th dorsal ray, the length of the curved section three fifths more than that of the straight, which is weakly armed posteriorly with 20 to 26 feeble plates, the widest of which, on the peduncle, is about one sixth of the eye-diameter.

Dorsal fin with viii, i 20 or 21 rays; spinous dorsal small, originating above the pectoral-base; procumbent spine exposed; spines feeble, third longest, 2·5 to 2·6 in the length of the head, the two last free; soft dorsal originating one eleventh nearer to the root of the caudal than to the tip of the snout, the first ray filiform, extending when depressed to the base of the 14th to 18th ray[23] and 3·4 to 2·7 in the body-length; 2nd ray one eighth shorter than the head, those behind it gradually decreasing to the 6th; last ray not produced. Caudal fin deeply and widely forked, the lobes subequal, 3·35 to 3·55 in the length of the body. Anal fin with ii, i 16 rays, originating below the 7th dorsal ray; free spines short, the 2nd the longer, 2·6 to 2·7 in the eye-diameter and 8·15 to 8·5 in the 1st ray, which is slightly produced, 1·05 to 1·2 in the length of the head, and reaching when depressed to the 14th ray.[24] Pectoral fin with 20 rays, the 4th longest, extending to above the 6th or 7th anal ray, its length 2·7 to 2·9 in that of the body and as long as to one fifth longer than the head. Ventral fin rather small, 2·55 in the length of the pectoral and 6·25 to 6·55 in that of the body, the two outer rays equal and longest, reaching midway to the 6th anal ray.

Gill-rakers long and slender, 15 or 16 on the lower branch of the anterior arch, the longest about one fifth more than the gill-fringes and 6·2 to 6·4 in the length of the head. Vent midway between the origin of the ventral and the 2nd free anal spine.

Silvery, the back and upper sides washed with bronze. A large diffused blackish spot on the opercle, partly overlaid by a pearly blotch; similar pearly blotches on the cheeks, branchiostegals, and breast. No spot in the pectoral-axil; fins colorless, except the outer half of the pectoral, which is dusky violet. (*χρυσός*, gold; *ὀφρύς* eye-brow).[25]

Described from two fine examples, measuring respectively 154 and 165 millim., collected by the writer at Bowen, M.Q. The larger specimen is in the collection of the Amateur Fishermen's Association of Queensland, the smaller in the State Museum.

First described from specimens collected in the Seychelles by Dussumier, we next find it recorded from Batavia by Bleeker, who, while recognizing its close affinity to Valenciennes' fish, at first considered it worthy of specific distinction, but subsequently united the two forms under the common name *Citula chrysophrys*. Günther was unable to add to our knowledge of the species, nor does Kner, whose specimens came from Java, whence Bleeker had already recorded it. The latter, however, finally extended its range in a northerly direction to the Coast of China and in a southerly to that of Madagascar. Nothing further appears to have been heard of it from 1875 until it was obtained

[23] 11th in Valenciennes' figure.

[24] 12th in same.

[25] Valenciennes states that the superciliary region and the angle of the mouth are "golden yellow," hence the specific name. This is not noticeable in our examples, nor is it mentioned by Bleeker (1). It may, therefore, be a peculiarity of the western form.

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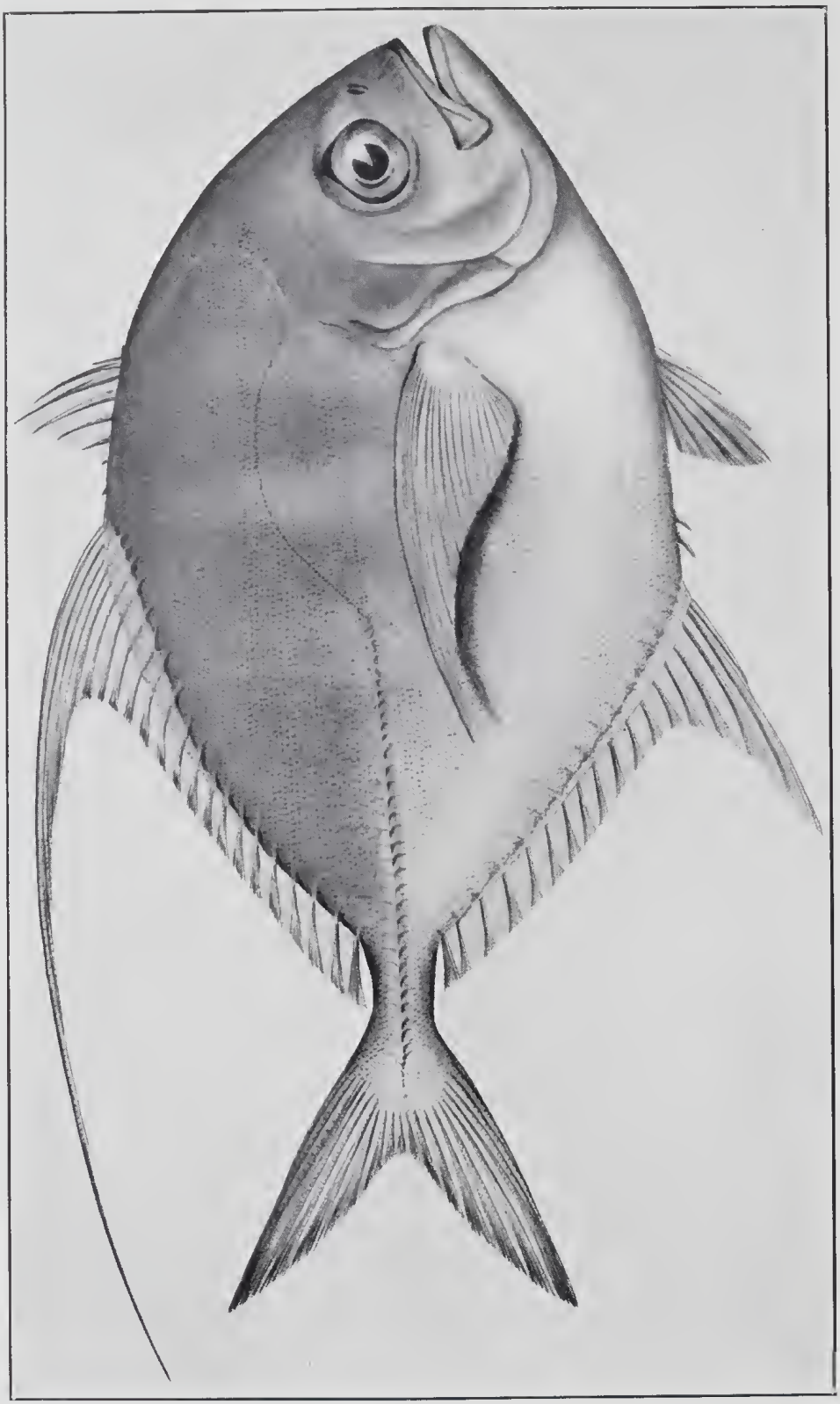

CITULA AUROCHS Ogilby. ⅔ Nat. Size.

Phyllis Clarke, del.

Face page 79.

in considerable numbers by the "Endeavour" during August 1910, first off Pine Peak, S.Q., and afterwards off Bowen, M.Q., which is at present the most easterly station where it occurs, since it does not appear in Jordan and Seale list of the fishes found in the Pacific Islands.[26] It has not, so far as we are aware, been recorded from the East Coast of Africa, nor has it been obtained in the Indian Seas. We have, therefore, for this fish the extraordinary distribution of five widely separated localities—Madagascar, the Seychelles, Java, China, and Eastern Queensland—between which it is unknown.

Uses:—Valenciennes states that it is a very wholesome fish (*tres-bon poisson*), and to us it certainly has every appearance of being a good food fish.

Dimensions:—Both Valenciennes' and Kner's examples measured 11 inches, but the former remarks that it grows larger; Bleeker's largest example of which we have cognizance was 350 millim. (about 13·8 in.) in length.

Remarks:—Valenciennes' figure differs from our fish in several respects, which may be briefly referred to here, even though some of them may be due to the greater age of his specimen. For instance: our fish is considerably deeper than his, being 2·45 in the total length (*i.e.* with caudal) as against 2·66 in his; Bleeker's Batavian specimens are in some cases even more slender, the proportional measurements being given as 2·66 to 3 in the length; here again, however, we find that some at least of Bleeker's fishes were still larger than that of Valenciennes, and we know that in other carangids (the two *Alectis, Tricropterus forsteri*, etc.) the law holds good—that the depth of the body decreases with advancing age. Again both Valenciennes' and Bleeker's fishes were much more robust than ours, their width being given as one third of the depth as against one fourth in ours, a difference out of all proportion to the difference in actual depth. Again the eye is much too small in Valenciennes' figure, being shown along its greater diameter as but one fifth of the length of the head as against 3·4 to 3·75 in ours and 3·5 to 4 in Bleeker's. Valenciennes, Kner, and Günther give the number of dorsal rays as 19, but the former figures 20 as in my larger example, while the latter has merely copied his predecessor; Bleeker inadvertently omits all mention of the fin-formulæ in the only paper to which we can refer. Lastly Valenciennes' illustration shows nearly the whole opercle scaly, which is certainly incorrect as regards our fish. These differences, however, are not sufficient to justify the separation of the two forms, unless future investigation should prove them to be constant.

CITULA AUROCHS sp. nov.

BLACK-CRESTED TREVALLY.

(Plate XXV.)

Type locality:—Edgecumbe Bay, M.Q.

Body deeply ovate and strongly compressed, the dorsal and ventral contours subsymmetrical: width of body 4·25 to 4·5 in its depth, which is 1·8 to 1·9 in its length and about five sixths more than the length of the head; abdominal

[26] "Fishes of Samoa," in Bull. U. S. Bur. Fisher.

region short, 1·8 to 1·9 in the length of the anal: caudal peduncle as deep as to one sixth deeper than wide, its width 2·1 to 2·2 in the eye-diameter. Head moderate, its upper profile evenly convex from above the nostrils, its length 3·4 in that of the body, its width 2·4 to 2·5 in its depth, which is from one seventh to one tenth more than its length; cranio-nuchal keel well developed, cultriform. Snout short, with linear strongly acclivous profile, its length 1·25 in the eye-diameter, which is 2·85 to 3 in the length of the head; adipose lid little developed; interorbital region elevated and acute, its width 1·2 in the eye-diameter. Lower jaw somewhat projecting; maxillary rather slender, extending to below the anterior border of the pupil, its length 2·5 to 2·6 in that of the head, the width of its truncate distal extremity a little less than its distance from the eye and 3 to 3·15 in the eye-diameter. Preopercular border entire.

Jaws with a narrow band of villiform teeth; a diamond-shaped patch of similar teeth on the head of the vomer; a broad band on the palatines and a narrow one along the middle of the tongue.

Cheeks, postorbital region, and upper angle of opercle covered with small inconspicuous scales; rest of head, nuchal ridge, and breast naked; preorbital and preopercle crossed by several simple or branched mucous canals; nuchal canal simple, not reaching to the dorsal fin. Lateral line moderately curved to below the 8th or 9th dorsal ray, the length of the curved section 1·33 to 4 in that of the straight, which is armed throughout with 38 to 40 rather weak spinose scutes, the widest of which is from 3·5 to 4 in the eye-diameter.

Dorsal fin with vii, i 21 or 22 rays; procumbent spine well developed, exposed; spinous dorsal low, the spines weak, 3rd longest, 2·45 to 2·6 in the length of the head, the last isolated and much stronger than the others. Soft dorsal originating a little nearer to the tip of the snout than to the root of the caudal, the 1st ray produced as a slender filament of varying length, extending to between the base to well beyond the tip of the caudal fin, and from five ninths to five sixths of the body-length; 2nd ray much shorter, as long as to one third longer than the head; the succeeding rays rapidly decrease to the 6th, beyond which they are equal, the last scarcely produced. Caudal fin deeply forked, the lobes equal and pointed, 3·5 to 3·6 in the length of the body. Anal fin with ii, i 17 or 18 rays, originating below the 8th dorsal ray; 2nd free spine the longer, 2·15 to 2·35 in the eye-diameter and 6·15 to 6·25 in the 1st ray, which is slightly produced, its length equal to or a little less than that of the head and reaching when depressed to the 12th or 13th ray. Pectoral with 20 rays, its length 2·5 to 2·6 in that of the body; 4th ray longest, reaching to above the 10th anal ray. Ventral moderate, its length 2·3 to 2·55 in that of the pectoral and 1·7 to 1·9 in that of the head, the 2nd ray longest, reaching to or nearly to the free anal spines.

Gill-rakers rather long and slender, 15 or 16 + 41 to 38 on the anterior arch, the longest 5 to 5·2 in the length of the head and rather longer than the

gill-fringes. Vent well forward, midway between the origin of the ventrals and the 2nd free anal spine.

Back and upper sides dark blue, with six broad faint cross-bands, which disappear with age, shading down the lower sides to the silver of the throat and abdomen; cranio-nuchal ridge black; a diffused brown spot behind the eye; snout, edge of mandible, and chin violet. Dorsal filament and inner rays of ventrals black, the outer ray and the tip white. (*aurochs*, the European Bison; in allusion to its bluff head.)

Described from two specimens, measuring respectively 157 and 167 millim., of which the former was taken off Pine Peak, M.Q., on August 1, 1910, at a depth of 25 fath., and the latter at one or other of the localities referred to below on the coasts of South and Middle Queensland. Two other examples are in the Queensland Museum (O.C.) without locality and in such bad condition as to be valueless for descriptive purposes; they were labelled *Caranx armatus*.

Reg. No. of type in the Queensland Museum—I. 14/2218.

Range:—Coasts of South and Middle Queensland, apparently widely distributed but nowhere abundant, at least during the winter months. The localities noted during the investigations carried out on our coast by the F.I.S. "Endeavour" were—Hervey and Bustard Bays, S.Q., 1 example each; Pine Peak and Edgecumbe Bay, M.Q., 4 and 10 examples respectively. All these fishes were taken on a sandy or muddy bottom at a depth varying from 15 to 25 fathoms. It will be remarked from the above that the number of specimens increased steadily from south to north, and we may, therefore,, fairly assume that it is an inhabitant of the entire Eastern Coast of Queensland, more especially the northern section.

Dimensions:—Attains a length of at least 175 millim.

Remarks:—This species has been confounded with the *Caranx armatus* of Günther's Catalogue, but that author's description is unreliable, having manifestly been drawn up from two or more species. We may, however, point out that in the Queensland species the shape of the lateral line and the number and strength of its scutes are very different from those of the western fish; the snout also is much shorter than the eye in our fish and the maxillary correspondingly extends further backward, while in the eighteen examples, which we have seen, none of the middle dorsal rays were produced, a character which, according to Günther, effectually separates it from *C. atropus*; Day's *C. atropus* does not, however, seem to be the same as Günther's, but ours may be at once distinguished by the shorter ventrals and narrower maxillary. It is also different from *C. armatus* Day, with an Indian example of which McCulloch has kindly compared it, and writes "the profile is different and the lateral line differently curved." Referring to *Caranx altissimus* Jordan and Seale[27] he writes—"Also very near *C. altissimus*, but it has a narrower preorbital and the lateral is different."

[27] Proc. Davenport Acad., x, 1905, p. 7, pl. iii.

ALECTIS Rafinesque.

Gallus Lacépède, Hist. Nat. Poiss., iv, 1802, p. 583 (*virescens*). Not of Brisson 1760.

Alectis Rafinesque, Anal. Nat., 1815, p. 84. Substitute for *Gallus*, preoccupied in ornithology; Jordan & Evermann, Fish. North and Mid. Amer., pt. 1, 1896, p. 931.

Blepharis Cuvier, Regne Anim., ed. 1, ii, 1817, p. 322 (*ciliaris*).

Scyris Cuvier, ibid., ed. 2, ii, 1829,[1] p. 209 (*alexandrina*).

Gallichthys Cuvier & Valenciennes, Hist. Nat. Poiss., ix, 1833, p. 168 (*gallus* = *indica*). Substitute for *Gallus* preoccupied.

Blepharichthys Gill, Proc. Acad. Nat. Sci. Phila., 1861, App., p. 36. Substitute for *Blepharis*, erroneously supposed to be preoccupied by Jussieu, who had used it for a genus of plants.

Body elevated and strongly compressed, especially in the young, the dorsal and ventral contours angular, subsymmetrical or the former the higher, the highest points of both at the origins of the soft dorsal and anal fins respectively. Scales minute and deeply embedded, so as to be apparently absent in the adult. Lateral line rather strongly curved to below the middle of the soft dorsal, the straight portion the longer, armed posteriorly with a few weak scutes. Head large and deep, partially scaly, the cranio-nuchal keel trenchant in the young, becoming blunter with age. Mouth moderate and protractile, the cleft varying from subvertical in the young to subhorizontal in the adult; lower jaw the longer; maxillary exposed and dilated posteriorly. Jaws, vomer, palatines, and tongue armed with villiform teeth, which usually disappear with age. Nostrils moderate and contiguous, the anterior valvular. Adipose eyelid little developed. First dorsal fin consisting of 5 or 6 small isolated spines, which are overgrown by muscular tissue as age advances; soft dorsal with i 19 to 21 rays, the first six exceedingly long and criniform; some of the immediately succeeding rays may also be produced, but to a much less extent. Caudal fin widely forked; the peduncle slender. Anal similar to the soft dorsal, with ii, i 16 to 19 rays, the first four or five criniform. Pectoral long and falciform, with 18 or 19 rays. Ventrals inserted in advance of the pectorals, the rays greatly produced in the young, but rapidly decreasing in length with advancing age. (*Alectis:* a feminized form of ἀλέκτωρ, a cock.)

Fishes of moderate or large size, inhabiting all warm seas, varying greatly in appearance according to the age of the individual. Three, perhaps four, species.

Key to the Queensland Species.

a^1. Snout long and pointed; eye small; maxillary not nearly extending to the vertical from the eye; gill-rakers short and stout; vent much nearer ventrals than anal .. .. *indica.*

a^2. Snout short and rounded; eye large; maxillary extending to below the eye; gill-rakers long and slender; vent about midway between ventrals and anal .. .. .. *ciliaris.*

The above characters are constant at all stages of growth, but there are other supplementary characters, mostly due to age, which deserve mention here. For instance, in *A. indica* the dorsal contour is much higher than the ventral

[1] This is the earliest date given for the genus, but Rüppell had named one of the species *Scyris indicus* during the preceding year.

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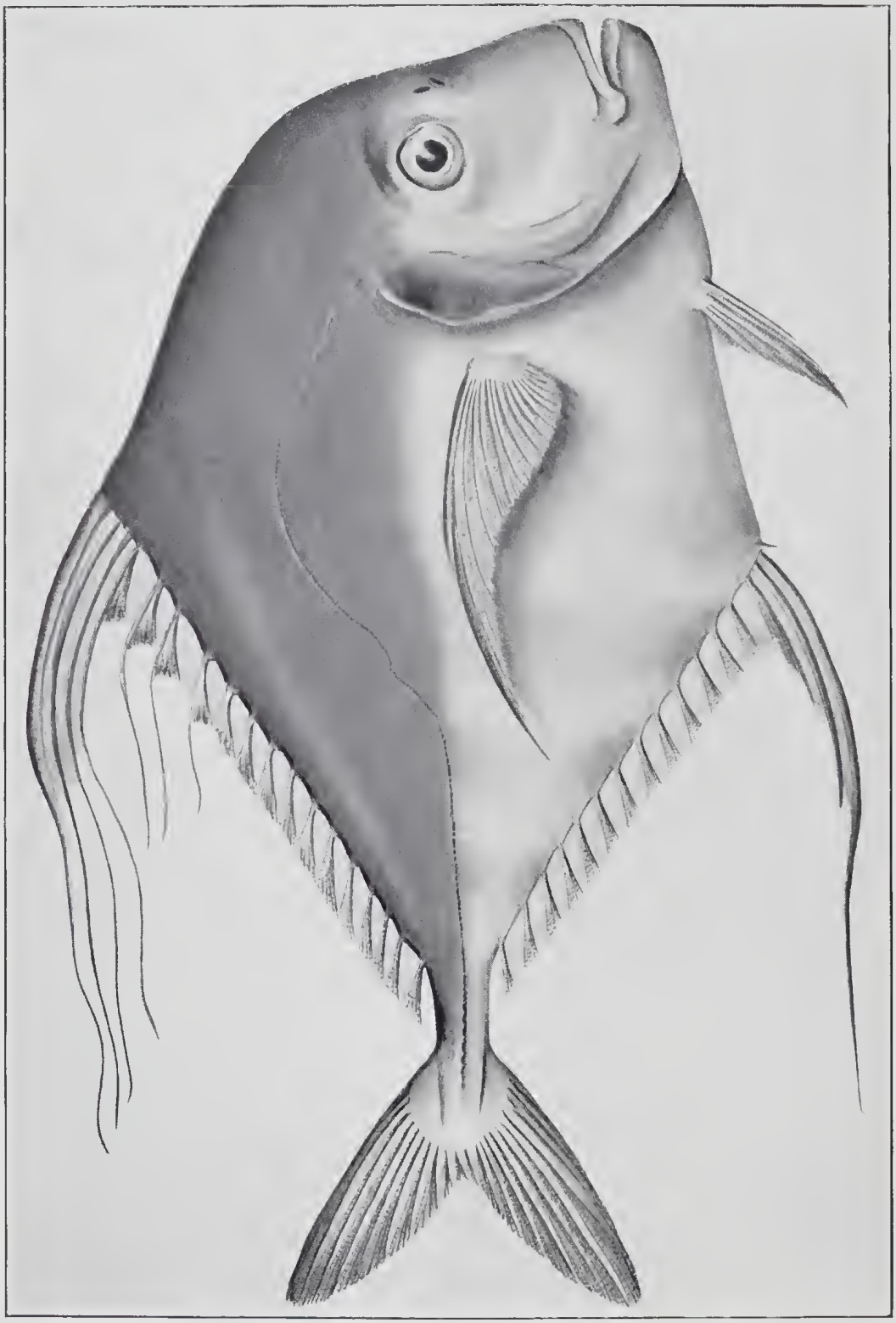


ALECTIS INDICA (Rüppell). ½ Nat. Size.

Phyllis Clarke, del.

owing to the greater flatness of the latter, the occipito-nuchal profile is constantly gibbous at all ages, and the dorsal fin is uniform in coloration; in *A. ciliaris* the dorsal contour is about as high as the ventral at all ages, the entire dorsal profile from the snout to the dorsal fin is evenly rounded in the adult, and the filiform dorsal rays are basally black.

Snyder remarks—"When compared with examples of *A. major* from Formosa, specimens of this species (i.e. *A. ciliaris*) may be recognised at a glance by the heavier body, smaller head which is much broader between the eyes, and the darker dorsal surface with the distinct curved lateral bands." The mention of lateral bands proves that Snyder had young examples only on which to base his conclusions, a fact which materially diminishes their value, and indeed while my investigations tend to show that all four are worthless as differential characters, two at least, the first and the last, are actually misleading.

With regard to the third species, *A. alexandrina*[2] from the Mediterranean and Tropical West Africa, the main differences between it and *A. indica,* to which it is more closely allied, seem to be the increased number of dorsal and anal rays and the decreased number of lateral line scutes.

ALECTIS INDICA (Rüppell).

Meer-hæn Nieuhof, Voy. Ind. Orient., i, 1682, p. 270, c. fig.; Willughby, Hist. Pisc., App., 1686, pl. vii, fig. 1.

Ikan-kapelle Ruysch, Theatr. Anim., i, 1718, pl. ix, fig. 7.

Ikan-batoe-jang-maha-asing Valentyn, Amboina, iii, 1726, p. 465, fig. 376.

Zeus sp. No. 2 Artedi, Gen. Pisc., 1738, p. 50 (*not synon.*); Seba, Thesauri, iii, 1761, pl. xxvi, fig. 34.

Bonyte-laertje Renard, Poiss. Moluq. et Terres Austr., ii, 1754, pl. xxvi, fig. 128.

Zeus gallus part. Bloch, Ausl. Fisch., vi, 1788, pl. cxcii, fig. 1 Bonnaterre, Encycl. Méth., Ichth., 1788, p. 71; Gmelin, Linnæus Syst. Nat., ed. 13, i, 1789, p. 1222; Schneider, in Bloch, Syst. Ichth., 1801, p. 91.

Gallus virescens part. Lacépède, Hist. Nat. Poiss., iv, 1802, p. 583, 584.

Zeus gallus Russell, Fish. Vizagapatam, i, 1803, p. 45. Not of Linnæus.

Gurrah-Parah Russell, ibid., pl. lvii.

Scyris indicus Rüppell, Atlas Fisch. Roth. Meer., 1828, p. 128, pl. xxxiii, fig. 1 (*young*); id., Neue Wirbelth. Abyss., Fisch., 1837, p. 51; Swainson, Nat. Hist. Fish., ii, 1839, p. 251; Cantor, Catal. Malay. Fish., 1850, p. 134.

Scyris indica Cuvier & Valenciennes, Hist. Nat. Poiss., ix, 1833, p. 145, pl. cclii; Richardson, Rep. Ichth. China and Japan, 1845, p. 276.

Gallichthys major Cuvier & Valenciennes, ibid., p. 168, pl. ccliv; Richardson, ibid., p. 271; Bleeker, Verh. Batav. Gen., xxii, 1849, Bali, p. 3; id., ibid., xxiii, 1850, Java, p. 8; Cantor, ibid., p. 136.

Blepharis gallichthys Swainson, ibid., p. 250.

Scyris ruppellii Swainson, ibid., p. 251.

Carangoides gallichthys Bleeker, Nat. Tijds. Nederl. Ind., ii, 1851, p. 471; id., ibid., iii, 1852, p. 57; id. Verh. Batav. Gen., xxiv, 1852, Makreel., p. 68; id., ibid., xxv, 1853, Bengal, p. 44; id., Nat. Tijds. Nederl. Ind., xii, 1856, p. 215; id. ibid., xvii, 1858, p. 147; id., ibid., xviii, 1859, p. 367; id., Act. Soc. Sci. Indo-Neerl., viii, 1860, Sumatra, p. 30; id., ibid., Borneo, p. 14; id., ibid., Celebes, p. 39.

[2] *Caranx alexandrinus* Geoffroy, Descr. Egypt, Poiss., pl. xxii, fig. 2.

Caranx gallus Günther, Brit. Mus. Catal. Fish., ii, 1860, p. 455; Day, Proc. Zool. Soc., 1865, p. 25; id., Fish. Malabar, 1865, p. 91; Klunzinger, Verh. zool.-bot. Ges. Wien, 1871, p. 454; Günther, Fisch. d. Südsee, pt. 4, 1876, p. 135; Day, Fish. India, pt. 2, 1876, p. 224, pl. li, fig. 3; Macleay, Proc. Linn. Soc. N. S. Wales, v, 1881, p. 538; Boulenger, Proc. Zool. Soc. London, 1887, p. 661; Kent, Great Barrier Reef, 1893, p. 289, chro.-pl. xvi, fig. 2; id., Natur. in Austr., 1897, p. 169, text-fig. p. 153, and pl. xxvii, fig A; Stead, Edib. Fish. N. S. Wales, 1908, p. 88, pl. lviii.

Carangoides gallus Bleeker, Versl. Akad. Amsterdam, xii, 1861, pp. 53, 74; id., ibid., xiv, 1862, p. 106.

Citula gallus Bleeker, Nederl. Tijds. Dierk., i, 1863, p. 242; id., ibid., ii, 1865, pp. 174, 191, 290; id., Versl. Akad. Amsterdam (2) ii, 1868, pp. 293, 300; id., Nederl. Tijds. Dierk., iv, 1873, p. 132; id., in Pollen and van Dam, Faun, Madagascar, pt. 4, 1875, Poiss., p. 99.

Caranx ciliaris Day, Fish. Malabar, 1865, p. 90 (*young*). Not *Zeus ciliaris* Bloch.

Scyris gallus Klunzinger, Fisch. Roth. Meer., i, 1884, p. 101.

Alectis ciliaris Stead, Fish. Austr., 1906, p. 158 (*letterpress*); Jordan & Seale, Bull. U. S. Bur. Fish., xxvi, 1907, p. 14; Seale & Bean, Proc. U. S. Nat. Mus., xxxiii, 1908, p. 242. Not *Zeus ciliaris* Bloch.

Caranx (*Alectis*) *gallus* Stead, Addit. Fish. Faun. N. S. Wales, 1907, p. 16, pl. iv.

Alectis Major Jordan & Richardson, Bull U. S. Bur. Fish., xxvii, 1908, p. 251; idd., Mem. Carnegie Mus., iv, No. 4, 1909, p. 180; idd., Check-List. Fish. Philipp. Archip., 1910, p. 21.

Alectis indicus Bean & Weed, Proc. U. S. Nat. Mus., xlii, 1912, p. 600.

PLUMED TREVALLY.

Diamond Fish (Kent); Silvery Moon-Fish (Stead).

(Plate XXVI.)

Type localities:—Red Sea at Massawa (*S. indicus*).
Pondicherry (*G. major*).

Dorsal contour of the body angular and elevated, more so in the young than in the adult, much higher than the ventral contour, the highest point being at the origin of the soft dorsal, between which and the occiput it is linear or feebly emarginate and moderately declivous; base of dorsal linear and rather less declivous; ventral contour linear from the throat to the middle of the breast, thence convex to between the ventral-bases, beyond which it is feebly concave to the anal, the base of which is linear and acclivous; width of body 4·6 to 3·85 in its depth, which is 1·45 to 1·85 in its length and 2 to 1·75 times the length of the head; abdominal region short, 1·95 to 1·7 in the length of the anal; caudal peduncle deeper than wide in the young, wider than deep in the adult, its width 2·2 to 1·5 in the eye-diameter. Head rather large and deep, its anterior profile slightly concave and very strongly acclivous, the occipital profile gibbous, its length 2·95 to 3·25 in that of the body, its width 2·8 to 2·4 in its depth, which is a little more than its length; cranio-nuchal keel trenchant in the young, becoming blunter with age. Snout long and pointed; eye moderate, its diameter 3·55 to 4·4 in the length of the head and 1·6 to 2·15 in that of the snout; interorbital region elevated, its width from one fifth less than the eye-diameter in the young to a little more in the adult. Lower jaw strongly declivous;

maxillary extending little more than midway along the snout, its length 3 to 3·2 in that of the head, the width of its distal extremity 3·4 to 3·7 in its distance from the eye and 2·5 to 2·25 in the eye-diameter. Preopercular border entire.

Young with minute teeth on the jaws, vomer, palatines, and tongue; these gradually disappear, so that a specimen of 15 in. merely has the jaw bones coarsely ridged and a feebly crescentic series of deeply imbedded teeth on the head of the vomer.

Lateral line strongly curved to below the 10th dorsal ray, the length of the curved section 1·3 to 1·4 in that of the straight, which is armed posteriorly with from 8 to 12 weak scutes.

Dorsal fin with vi to 0, i 19 rays; procumbent spine small and concealed; spinous dorsal consisting of six low unconnected spines in the young; with advancing age these disappear from the front until all have been absorbed in the muscular tissue. Soft dorsal originating midway between the tip of the snout and the root of the caudal or slightly nearer to the latter; anterior 10 to 5 rays gradedly filiform, extending in the young well beyond the tip of the caudal, but decreasing considerably with age; behind the filamentous rays, the others are of equal length to the last, which is slightly produced. Caudal fin deeply and widely forked, the lobes equal, one third of the body-length. Anal with ii too, i 16 rays, similar to but not so long as the dorsal, with only 4 or 5 filamentous rays, of which the first extends to the tip of the caudal. Pectoral with 18 rays, its length 2·45 to 2·6 in that of the body; 5th ray longest, extending to above the 11th anal ray. Ventral inserted well in advance of the pectoral, the two outer rays filiform in the young, reaching to the root of the caudal; the filaments rapidly disappear with age, and in specimens over 10 in. the fin is normal, 1·9 to 2.33 in the length of the pectoral and 5 to 5·85 in that of the body, with the outer ray the longest, reaching midway to between the 6th and 8th anal rays.

Gill-rakers short and stout, 22 on the lower branch of the anterior arch, the longest one tenth to one twelfth of the length of the head. Vent about one and a half time nearer to the origin of the ventral than to that of the anal.

Upper surface golden bronze, shading imperceptibly into the iridescent silvery of the lower sides and the breast; young lighter in color than the adult, with five or six broad dull blue bands extending from the back to below the middle of the sides; nuchal ridge blackish. Upper surface of head, snout, and jaws light brownish yellow, the cheeks and opercles silvery; opercular spot small and inconspicuous or absent. First dorsal ray, tips of the produced rays, and a narrow bar along the base of each interradial membrane black; caudal washed with gold; anal and pectorals colorless; ventral colorless, the elongate rays blackish in the young. (*indica:* a native of India.)

Described from four specimens, measuring respectively 165, 275, 290, and 338 millim. (from tip of snout to root of caudal), obtained from Raine Island,

Thursday Island, and the Burnett River, M.Q., and presented to the Queensland Museum by the Wanetta Pearling Co., Capt. Donald McDonald (2), and Mr. L. H. Maynard.

Historical:—To the early Dutch naturalists and historians of the East Indies this fish was well known from the time of Nieuhof, who visited those seas in the latter half of the seventeenth century. Its extraordinary appearance rendered it a favorite subject for illustration and, after Nieuhof, Willughby, Ruysch, Valentyn, Seba, and Renard figured it at intervals with more or less success. These were followed by certain authors (Bonnaterre, Gmelin, Lacépède) whose accounts were mainly based on the descriptions and figures of their predecessors, but who wofully complicated matters by confounding our fish with the *Zeus gallus* of Linnæus, an eastern American species now more generally known as *Selene vomer*. Russell, a contemporary of Lacépède, gave in 1803 a recognizable figure of the young fish over the name "Gurrah Parah" from a specimen taken on the East Coast of India. On the same sheet, as "Chewoola Parah," he figured the young of the succeeding species, *A. ciliaris* and, while in some points these figures are inaccurate, the flattened outline of the abdominal region, so distinctive of our present fish, is well shown as compared with the deeper and more rounded belly, which is characteristic of its congener when young. Russell, however, like the others confused his "gurrah parah" with *Zeus gallus* Linnæus, while he referred his "chewoola parah" to Linnæus' *Zeus vomer*, thus while correctly keeping the two Indian species separate, uniting them by two names, which properly belong to a single Atlantic species. Up to this time our fish was only known from Malayan and Indian seas, and it was not until 1828 that the eastern fish was definitely separated from its western relative by Rüppell, who described it under the distinctive name of *Scyris indicus* from specimens obtained at Massawa on the Abyssinian shore of the Red Sea. Valenciennes in his two[3] descriptions adds little or nothing to our knowledge of the species, nor does Cantor who also described it under two names. Richardson added the China Sea to its range, mentioning specimens sent to England from Macao and Canton. Bleeker, between 1849 and 1875, reported it from various parts of the Malay Archipelago as enumerated elsewhere, and finally includes it among the fishes of Madagascar though, so far as we can ascertain, it has not been reported from either Mauritius or Zanzibar. Up to and including 1860 Bleeker had rightly kept the Indo-Malayan fish separate from that of the Atlantic, but

[3] Bean and Weed remark—"Cuvier & Valenciennes describe this species under five names: *Scyris indicus*, *Scyris alexandrinus*, *Gallichthys major*, *Gallichthys chevala*, and *Gallichthys ægyptiacus.*" Although there can be no question as to the close affinity that exists between our fish and *Alectis alexandrina*, their identity cannot so carelessly be taken for granted, and we are disposed to place more than ordinary reliance on the increased number of dorsal and anal rays in the Mediterranean form, on account of their remarkable constancy throughout the whole range of the Indo-Pacific, as favoring a contrary conclusion. This of course also excludes *G. ægyptiacus*, while *G. chevola* is a synonym of *A. ciliaris*.

with the publication of the second volume of the "British Museum Catalogue of Fishes" Günther revived the old error by again associating our species with the *Zeus gallus* of Linnæus. This action was taken in direct defiance of the Swedish author's assertion "habitat in America," and of his references to Maregrave, the historian of Brazil about the middle of the seventeenth century, and of Patrick Brown, a contemporary of Linnæus, who published his "Civil and Natural History of Jamaica" only two years previously to that of the tenth edition of the "Systema Naturæ." This deliberate return to an already refuted error had immediate consequences, resulting in indescribable confusion, the effects of which are still apparent. In 1876 the same author made a notable addition to the distribution of the species, recording it on the authority of Garrett from the Hawaiian Archipelago in the North Pacific and the Society Group in the South. In the same place he makes the earliest announcement of its occurrence in Australia—"*und erstreckt sich bis andie Nordkuste Australiens*"—a record which Macleay failed to discover. While, however, Günther always insisted on the validity of the two Indo-Pacific species, Day in 1865 introduced yet another disturbing influence to the already too involved history of these fishes, by suggesting that *A. ciliaris* might be only the young of this species. He writes of *A. ciliaris*—"Large ones have not been recorded, unless the *C. gallus* is the mature of this species"; and again—"The difference between the *C. gallus* and *C. ciliaris,* if any exists," etc. The words in themselves were of little importance, yet they were destined to have far-reaching results, not the least of which was that in 1896 Jordan and Evermann united the two species under the common name *Alectis ciliaris*, giving among other things as an excuse for their action—"we see no reason for doubting that *ciliaris* is the young of *gallus, as has been supposed by Dr. Day and others.*"[4] This unfortunate assumption was immediately accepted as correct by most if not all American ichthyologists who wrote on the subject, with the consequence that for eight years the references to these fishes are so inextricably confused that it is almost impossible to disentangle them, and give to each its proper application. Nor was this confusion wholly confined to America, for Stead in 1906 under *C. ciliaris* figures that fish but writes of its congener. In 1907, however, Jordan and Richardson (1), after comparing examples from Formosa with others of the same size from Panama, wrote—"Comparison of adult specimens . . . leaves no doubt that the two are distinct species."

Uses:—Of its value as a food fish we have but little information, but what we have is favorable. Valenciennes, on the authority of Leschenault, says that "it is good to eat." Day tells us that on the Malabar Coast it is "esteemed as food." Jordan and Evermann consider it "a food fish of some importance"; while Kent, who calls it the "diamond-fish," a name which properly belongs to *Monodactylus argenteus,* remarks that "it is met with in some abundance northward from Port Denison, and is very delicate eating."

[4] The italics are ours.

Range:—From the Queensland Coast it was first definitely reported by Macleay, whose specimen came from the Endeavour River, N.Q.; Kent extended its range southward to Bowen, M.Q., off which the "Endeavour" subsequently trawled 18 young examples in 14 fathoms on fine sand and mud. To these, as previously stated we can add Thursday Island, Raine Island, B.R., and the Burnett River, M.Q., this being the most southerly locality of which we have any note on our coast. Beyond our shores Stead has figured a specimen sent to him from "the Evans River, a little to the north of the Clarence River," N.S.W., thus adding many miles to its southerly range, and finally Kent claims rather vaguely to have seen it in West Australian waters, and Günther as vaguely records it from the North Coast. In the Archipelago it was recorded nearly two centuries ago by Valentyn from Amboina and later from the Moluccas and "les eôtes des Terres Australes" by Renard, and its abundance and wide distribution there can not be better shown than by the following list of the islands from which Bleeker received it—Waigiou, Ceram, Amboina, Batchian, Obi, Celebes, Bali, Borneo, Java (whence Valenciennes had already recorded it), Banca, Bintang, Rio, Nias, and Sumatra, while Cantor added Pinang and Günther the Malay Peninsula. It ranges northward through the Philippines to Formosa and China, and westward through the Indian Seas to the Persian Gulf (*Boulenger*), the Red Sea (*Rüppell*), and Madagascar (*Bleeker*). From the Pacific it has been recorded from the Hawaiian and Society Groups and should, therefore, be generally distributed.

Dimensions:—On the Australian Coast Stead has recorded it as attaining a length of 456 millim.; our largest specimen, from Raine Island, measured 428, but it is said to grow to 900 and even according to Day to 1,500 millim.

Illustration:—The specimen, of which Miss Clark has given us so beautiful a figure, measured 216 millim. and came from the Burnett River.

ALECTIS CILIARIS (Bloch).

Zeus ciliaris Bloch, Ausl. Fisch., vi, 1788, p. 29, pl. xci; Bonnaterre, Encycl. Méth., Ichth., 1788, p. 71, pl. lxxxix, fig. 372; Gmelin, Linnæus Syst. Nat., ed. 13, i, 1789, p. 1223; Schneider, in Bloch, Syst. Ichth., 1801, p. 94; Lacépède, Hist. Nat. Poiss., iv, 1802, pp. 570, 572; Shaw, Gen. Zool., iv, 1804, p. 283.

Scomber filamentosus Mungo Park, Trans. Linn. Soc. London, iii, 1797, p. 36; Schneider, ibid., p. 34.

Gallus virescens part. Lacépède, ibid., pp. 583, 584.

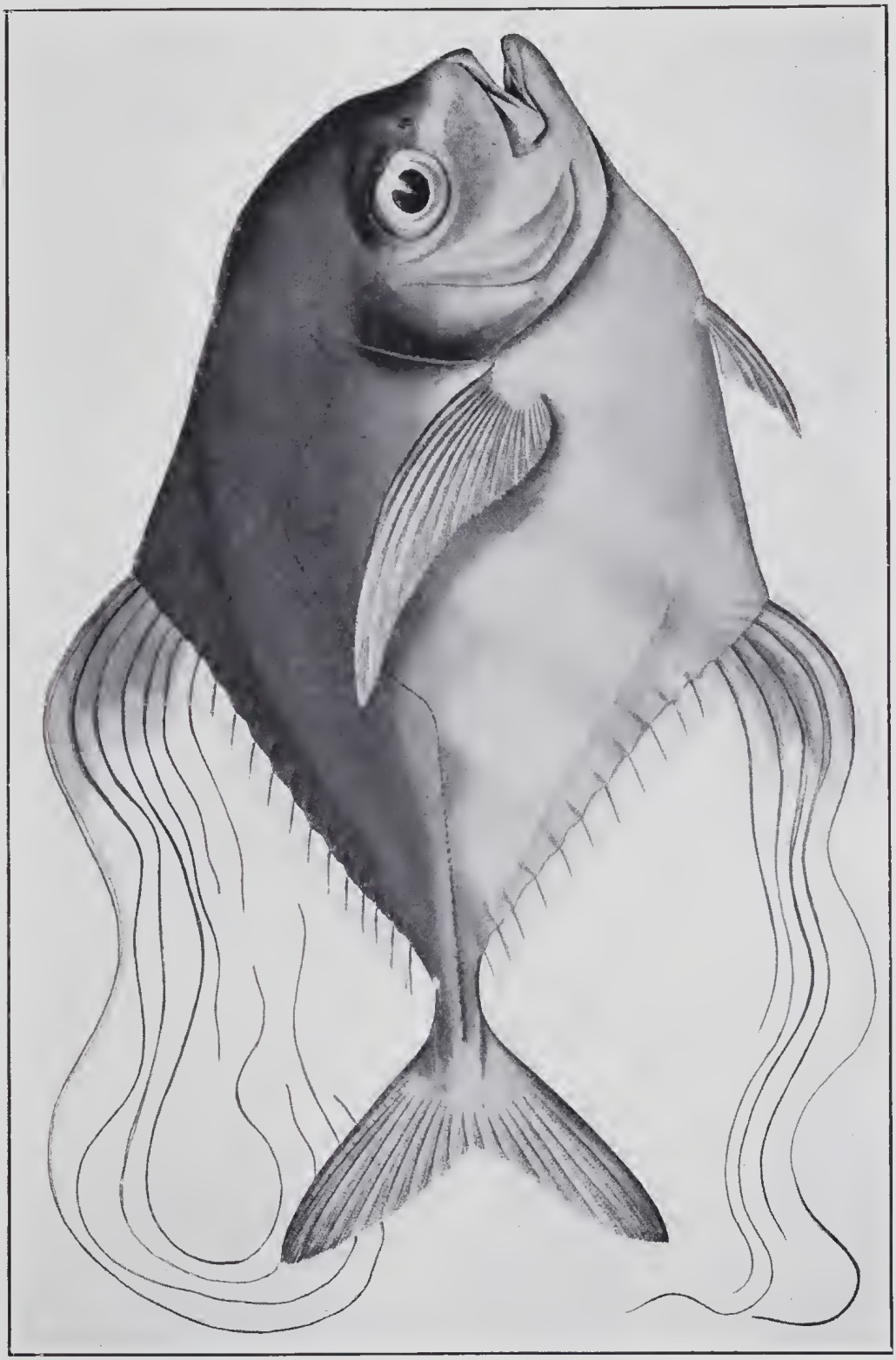
Zeus vomer Russell, Fish. Vizagapatam, i, 1803, p. 46. Not of Linnæus.

Chewoola-Parah Russell, ibid., pl. lviii.

Zeus crinitus Mitchill, Amer. Journ. Sci. and Arts, xi, 1826, p. 144, pl. opp. p. 1.

Blepharis fasciatus Rüppell, Atlas Fisch. Roth. Meer., 1828, p. 129, pl. xxxiii, fig. 2.

Blepharis indicus Cuvier & Valenciennes, Hist. Nat. Poiss., ix, 1833, p. 154; Valenciennes, in Cuvier Règne Anim., ed. Illustr., 1836, Poiss. pl. lviii, fig. 3; Schlegel, Faun. Japon., Pisc., dec. 7, 1845, p. 113, pl. lx, fig. 2; Richardson, Rep. Ichth. China and Japan, 1845, p. 271.



ALECTIS CILIARIS (Bloch). ⅔ Nat. Size.

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Blepharis sutor Cuvier & Valenciennes, ibid., p. 161; Guichenot, in Ramon de la Sagra, Hist. Cuba, 1853, p. 114.

Blepharis major Cuvier & Valenciennes, ibid., p. 163.

Gallichthys chevola Cuvier & Valenciennes, ibid., p. 175.

Blepharis crinitus De Kay, New York Faun., Fish., 1842, p. 123; Storer, Synops. North Amer. Fish., 1845, ii, p. 300.

Carangoides blepharis Bleeker, Verh. Batav. Gen. xxiv., 1852, Makreel, p. 57; id., Nat. Tijds., Nederl. Ind., iii, 1852, p. 235; id. Verh. Batav. Gen., xxv, 1853, Japan, p. 4; id., Nat. Tijds. Nederl. Ind., xvi, 1858, p. 26; id., ibid., xvii, 1859, p. 147; id., Act. Soc. Sci. Indo-Neerl., viii, 1860, Sumatra, p. 30; id., ibid., Celebes, p. 39.

Caranx ciliaris Günther, Brit. Mus. Catal. Fish., ii, 1860, p. 454; Day, Proc. Zool. Soc. London, 1865, p. 25; id., ibid., 1870, p. 689; Klunzinger, Verh. zool.-bot. Ges. Wien, 1871, p. 454; Day, Fish. India, pt. 2, 1876, p. 224; Günther, Fisch. d. Sudsee, pt. 4, 1876, p. 135, pl. lxxxix, figs A and B (*young*); Macleay, Proc. Linn. Soc. N. S. Wales, v, 1881, p. 537 (*after Günther* 1); id., ibid., vii, 1882, p. 356; id., ibid., xi, 1886, p. 505; Ogilby, Catal. Fish. N. S. Wales, 1886, p. 26; Boulenger, Proc. Zool. Soc. London, 1889, p. 240; Weber, in Semon, Zool. Forsch, 1895, p. 267.

Caranx sutor Günther, Brit. Mus. Catal. Fisch., ii, 1860, p. 454.

Blepharichthys crinitus Gill, Proc. Acad. Nat. Sci. Phila., 1861, App., p. 36; id., ibid., 1862, p. 262.

Scyris analis Poey, Synopsis, 1868, p. 369.

Gallichthys crinitus Lütken, Spolia Atlantica, 1880, pp. 131, 197.

Caranx crinitus Jordan & Gilbert, Proc. U. S. Nat. Mus., 1882, p. 359; idd., ibid., 1883, p. 203.

Alectis crinitus Jordan & Gilbert, Synopsis, 1883, p. 438.

Alectis ciliaris part. Jordan & Evermann, Fish. North and Mid. Amer., pt. 1, 1896, p. 931; idd., ibid., Proc. U. S. Nat. Mus., xxv, 1903, p. 338; Jordan & Snyder, Proc. U. S. Nat. Mus., xxvii., 1904, p. 942; Jordan & Evermann, Bull. U. S. Bur. Fisher., xxiii., 1905, p. 200.

Alectis ciliaris Jordan & Rutter, Proc. Acad. Nat. Sci. Phila., 1897, p. 101; Waite, Synopsis Fish, N. S. Wales, 1904, p. 41; Stead, Fish. Austr., 1906, text-fig. 57; Jordan & Evermann, ibid., text-fig. 78; Snyder, Proc. U. S. Nat. Mus., xlii, 1911, pp. 411, 496.

PENNANT-FISH.

COBBLER-FISH; THREAD-FISH.

(Plate XXVII.)

Type localities:—Surat, B.I. (*Z. ciliaris*).
Coast of Sumatra (*S. filamentosus*).
Red Sea (*B. fasciatus*).
Moluccas (*B. indicus*).
Block Island, N. W. Atlantic (*Z. crinitus*).
Martinique, W.I. (*B. sutor*).
Martinique, W.I. (*B. major*).
Vizagapatam, B.I. (*G. chevola*).
Cuba, W.I. (*S. analis*).

Dorsal contour of body angular and elevated, much more so in the young than in the adult, as high as or a little higher than the ventral contour, the highest points of both being respectively at the origins of the soft dorsal and anal; profile of upper surface in front of the dorsal prominence evenly rounded in the adult, in the young more steeply declivous in front, with a marked occipito-nuchal gibbosity resulting in a slight predorsal concavity, much as in *A. indica*,

which it elsewhere resembles in contour; width of body 4·35 (adult) in its depth, which is 1·15 to 1·6 in its length and 2·5 to 1·85 times the length of the head; abdominal region longer, 1·75 to 1·55 in the length of the anal; caudal peduncle much deeper than wide in the young, a little wider than deep in the adult, its width 4·15 to 2·15 in the eye-diameter. Head rather large and deep, its length 2·85 to 3 in that of the body, its width 3 to 2·6 in its depth, which is from one third to one eighth more than its length; cranio-nuchal keel cultriform in the young, becoming blunter with age. Snout short and rounded; eye large, its diameter 2·4 to 3·2 in the length of the head and from three eighths more to a little less than that of the snout; interorbital region elevated, its width 1·33 to 1·1 in the eye-diameter. Lower jaw moderately declivous; maxillary extending to or slightly beyond the vertical from the anterior border of the pupil, its length 2·3 to 2·65 in that of the head, the width of its distal extremity 1·55 to 1·75 in its distance from the eye and 3·33 to 2·9 in the eye-diameter. Preopercular border entire.

Jaws with broad bands of villiform teeth, intermixed with which anteriorly are some rather larger teeth; a triangular patch of villiform teeth on the head of the vomer; similar teeth in bands on the palatines and tongue.[5]

Lateral line strongly curved to below the 10th dorsal ray, the length of the curved section 1·1 to 1·25 in that of the straight, which is armed posteriorly with from 10 to 15 feeble scutes.

Dorsal fin with vi to 0, i 19 rays; procumbent spine small and concealed; spinous dorsal consisting of six low unconnected spines in the young; with advancing age, these gradually disappear from the front until all have been absorbed in the muscular tissue. Soft dorsal originating midway between the tip of the snout and the root of the caudal; anterior 6 rays exceedingly produced but not graded from the front, the last pair occasionally being the longest, extending at all ages far beyond the tip of the caudal; behind the filiform rays the others are equal length to the last, which is slightly produced. Caudal fin widely forked, the lobes equal, 3·1 to 4 in the body-length. Anal with ii to 0, i 16 rays, originating below the 9th dorsal ray, similar to but shorter than the soft dorsal, with 4 or 5 filamentous rays, which are graded from the front, the 1st as long as or even longer than the longest dorsal. Pectoral with 19 rays, its length 2·5 to 2·7 in that of the body; 5th ray longest, extending to above the 13th anal ray. Ventral inserted in advance of the pectoral, the 4 outer rays gradedly filiform in the young, reaching to the last third of the anal or not quite so far, its length three eighths to one fourth more than that of the pectoral and a half of the body-length; these filaments rapidly decrease with age and in a 10-in. example the fin is normal, 2·15 in the length of the pectoral and 5·4 in that of the body, the 2nd ray longest, reaching midway to the 6th anal ray.

[5] The teeth are as well developed in a 10-in. as in a 4-in. specimen.

Gill-rakers moderately long and slender, 14 or 15 on the lower braneh of the anterior arch, the longest 5·75 to 7·5 in the length of the head. Vent about midway between the origins of the ventrals and anal.

Silvery, the upper surface washed with blue, the sides and lower surface iridescent; young with six or seven darker bands about as wide as the interspaee; these are sometimes direeted obliquely forward, but more usually the body-bands are vertical leaving the orbito-nuchal band oblique; this latter is persistent in the adult as a more or less defined supraciliary blotch; none of the bands deseend to the abdominal or thoracic regions, though posteriorly some may approaeh the anal. A large dark suffused spot on the opercle; tip of mandible dusky. Filamentous dorsal and anal rays and the ventrals black in the young, yellow in the adult, the black persistent as a basal spot, which is generally present on the dorsal, more rarely on the anal; rest of the fins yellowish gray, the caudal with a brownish tinge, in the young black-edged. (*ciliaris*, furnished with cilia; in allusion to the hair-like rays of the dorsal and anal fins.)

Described from three Moreton Bay examples, measuring respectively 99, 114, and 247 millim., the smallest and the largest being in the collection of the Amateur Fishermen's Association, by whom they were kindly lent to us for the purpose of this work; the third is in the Queensland Museum.

Historical:—Being unable to consult the works of the early Dutch naturalists, we have been compelled to trust to Valenciennes for the establishment of the identity of all their figures with *Alectis indica*; but the faet that the species, of which we are now treating, is also widely distributed throughout the Indo-Malayan Archipelago suggests that some confusion may have occurred among them, as we have shown to be the case with those who came after them. Indeed Valenciennes' own treatment of the subject does not invite much confidenee in his dealings with that of others. Bonnaterre's figure shows well the distinctive characters which separate this fish from its congener, but the same ean not be said of Russell's in whose drawings they are inextricably mixed. In 1826 Dr. Samuel Mitchill[6] of New York deseribed as *Zeus crinitus* a small fish which had been washed ashore on Block Island in the North-West Atlantic. This fish has been generally referred by recent writers to the synonymy of *A. ciliaris*, but this view was not held by Günther or Lütken. Rüppell's figure of *Blepharis fasciatus* is said by Jordan and Richardson[7] to be "well distinguished" from that of his *Scyris indicus*, but these authors are at varianee with Günther as to which figure represents *B. fasciatus* (i.e. *A. ciliaris*). Valenciennes described this species by no less than four names—*Blepharis*

[6] Günther refers this fish to the synonymy of *Caranx sutor*, giving the reference as *Z. crinitus* Akerly. There are two errors here; firstly the fish was described by Mitchill, Akerly being merely the artist who drew Mitchill's plate, and secondly *Z. crinitus* antedating *Blepharis sutor* by seven years, the position of the names should have been reversed.

[7] Bull. U. S. Bur. Fish., xxvii, p. 251.

indicus, *B. sutor*, *B. major*, and *Gallichthys chevola*, the first and last representing the Indo-Malayan, the others the Atlantic form. These latter, if they should be separable, would of course have to be relegated to the synonymy of *Alectis crinita*, to give in that case Mitchill's fish its correct name. Bleeker next added his contribution to the confusion by giving it the totally unnecessary name of *Carangoides blepharis*; this name is doubly erroneous because, with the exception of the similarity of the dentition, our fish has but little in common with *Caranx præustus* Bennett,[8] which is the type of *Carangoides* Bleeker,[9] not *C. plagiotænia* Bleeker[10] as stated by Jordan and Evermann (1).[11] In Günther's (2) figure of a young specimen (59 millim.) he depicts the body as being rather deeper than long and nearly three times as long as the head, which is just what might have been expected as compared with the same measurements taken from the larger (99 millim.) example before me. The specimen figured by Günther on the same page as adult (*ausgewachsenen*) is, however, little more than if so much as half-grown, as may be proved by the depth of the body being 1·1 in its length, instead of 1·6, which is the case in the adult fish. The ventrals also by their length show that his fish is quite immature, and it is very interesting to note how their decrease in length coincides with the increase in the pectorals.

Uses:—Most writers, having only seen young specimens, are silent as to its edible qualities, but there is no reason to believe that it differs from those of its congener, though Valenciennes, on the authority of Dr. Kœnig, remarks of *Blepharis indicus* that "its flesh is poor, stringy, and insipid."

Range:—Warmer parts of the Indian, Pacific, and perhaps West Atlantic Oceans. On our coast we can only report it with certainty from Moreton Bay, S.Q., and Edgecumbe Bay, M.Q. From the former we have seen about a dozen examples, mostly young, in as many years; from the latter seventy-two, all young, were trawled by the "Endeavour" along with *A. indica*. Since, however, it occurs as far south as Port Jackson and also throughout the whole of the Malayan subregions, we may safely assume that it is found along our entire coast-line though, possibly for reasons connected with its habits and as yet unascertained, it does not come within the scope of our fishermen's operations. The earliest Australian record that we can find is that of Macleay in 1881, which simply runs "Port Jackson North Coast" without giving any indication

[8] Life of Raffles, 1830, p. 689.

[9] Nat. Tijds. Nederl. Ind., i, 1851, p. 352.

[10] Act. Soc. Sci. Indo-Neerl., ii, 1857, p. 59.

[11] *Carangoides* was first defined by Bleeker thus—"*Dentes supramaxillares et inframaxillares pluriseriati, æquales. Dentes vomerini, palatini, linguales.*" On the following pages he gives a list of some extra-archipelagian species, commencing with "*Caranx fusus* Geoffroy"—which, if Günther's account of the dentition be correct, is more of a *Carangus*. But as I understand the recommendations in "The International Code of Zoological Nomenclature, 1905, p. 25" his *Carangoides præustus*, being the first species described in the paper quoted (p. 363), takes precedence as the type.

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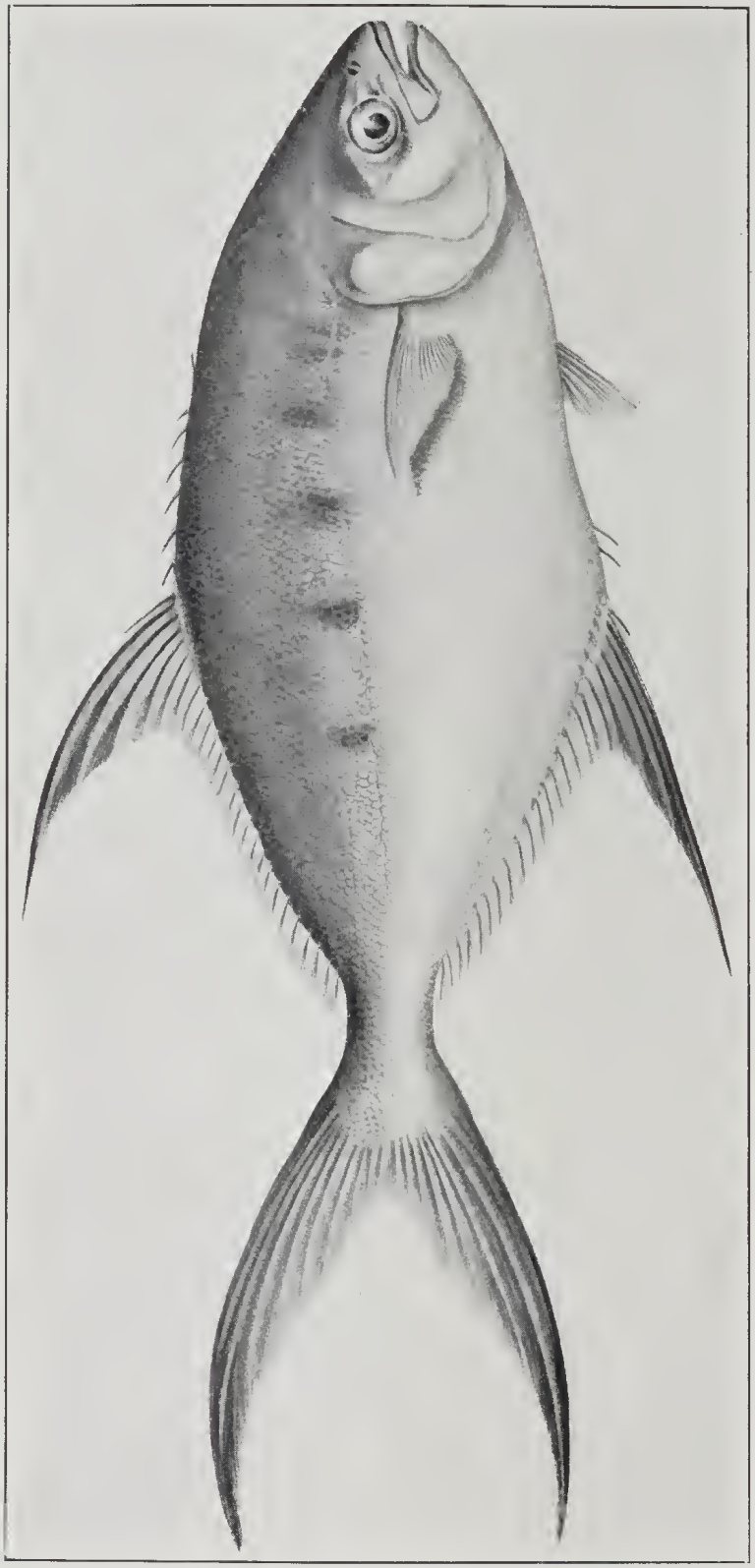

TRACHINOTUS BOTLA (Shaw). ⅔ Nat. Size.

Phyllis Clarke, del.

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as to whence he received his information; however, it is possible to state that the first record is authentic, but the second doubtful, as also is his Port Moresby record, both these referring with quite as much likelihood to *A. indica* as to this species. Fraser lists *Caranx gallus* from West Australia but omits *A. ciliaris*, but here again the identification is untrustworthy, though indications point to both species occurring. Turning westward we find it recorded from the Moluccas (*Valenciennes*), Amboina, Celebes, Bali, and Java (*Bleeker*), Sumatra (*Park*), Philippines (*Snyder*), Andamans (*Day*), and onward through the Indian Seas to the Persian Gulf (*Boulenger*), Red Sea (*Rüppell*), and East Coast of Africa (*Günther*). Northward it occurs throughout the China Seas to Japan; while eastward it has been reported from the Solomon and Pelew Groups, Kingsmill Island, and the Hawaiian Archipelago (*Günther*) even to the coasts of Lower California (*Gill* as *Blepharichthys crinitus*) and Mexico (*Jordan & Evermann*). The West Atlantic form has been recorded from Cape Cod, Mass. (*Jordan & Evermann*) southward to the West Indies—Martinique (*Valenciennes*), Cuba (*Sagra*), and Jamaica (*Jordan & Rutter*)—and South America (*Brit. Mus.*).

Dimensions:—Attains a length of at least 350 millim.

Illustration:—We have to thank the authorities of the Australian Museum for permitting to our artist the use of an adult specimen for our illustration.

TRACHINOTUS BOTLA (Shaw).

Botla Parah Russell, Fish. Vizagapatam, ii, 1803, p. 32, pl. cxlii.

Scomber botla Shaw, Gen. Zool., iv, 1803, p. 591 (*after Russell*); Swain, Proc. Acad. Nat. Sci. Phila., 1882, p. 306.

Trachinotus russelii Cuvier & Valenciennes, Hist. Nat. Poiss., viii, 1831, p. 436; Waite, Rec. Austr. Mus., v, 1904, p. 199; McCulloch, Rec. West Austr. Mus., i, p. 223.

Trachinotus oblongus Cuvier & Valenciennes, ibid., p. 437; Bleeker, Nat. en Geneesk. Arch. Nederl. Ind., ii, 1845, p. 516; id., Verh. Batav. Gen., xxv, 1853, Bengal, p. 44.

Trachinotus russellii Jerdon, Madras, Journ. Lit. and Sci., 1851, p. 136; Bleeker, ibid.

Trachynotus oblongus Günther, Brit. Mus. Catal. Fish., ii, 1860, p. 484; Boulenger, Proc. Zool. Soc. London, 1887, p. 661.

Trachynotus russellii Day, Fish. India, pt. 2, 1876, p. 233, pl. li B, fig. 3.

Trachynotus baillonii Alleyne & Macleay, Proc. Linn. Soc. N. S. Wales, i, 1877, p. 330; Macleay, ibid., v, 1881, p. 545 (After Günther); id., ibid., vii, 1882, p. 359; Woods, Fish. & Fisher. N. S. Wales, 1882, p. 17. Not of Lacépède.

Trachinotus bailloni Castlenau, Proc. Linn. Soc. N. S. Wales, iii, 1879, pp. 352, 362.

Trachynotus coppingeri Günther, Voy. Alert, Zool., 1884, p. 29, pl. iii, fig. A.

Trachynotus bailloni Ogilby, Catal. Fish. N. S. Wales, 1886, p. 27.

Trachynotus russelli Ogilby, Proc. Linn. Soc. N. S. Wales, xiv, 1890, p. 1028; id., Edib. Fish. N. S. Wales, 1893, p. 89; Tosh, Mar. Zool. Rep. Queensl, 1903, p. 4, pl.

Trachinotus baillonii Waite, Synops. Fish. N. S. Wales, 1904, p. 41; Stead, Fish. Austr., 1906, p. 264.

Trachinotus russelli Jordan & Seale, Bull. U. S. Bur. Fish., xxv, 1906, p. 235; Stead, Edib. Fish. N. S. Wales, 1906, p. 92, pl. xlii; Jordan & Richardson, Mem. Carnegie Mus., iv, 1909, p. 180.

Trachinotus velox Ogilby, Proc. Roy. Soc. Queensl., xxi, 1908, p. 14.

SWALLOWTAIL.

DART (New South Wales).

(Plate XXVIII.)

Type localities:—Vizagapatam, B.I. (*S. bolla*).
Vizagapatam, B.I. (*T. russelii*).
Java (*T. oblongus*).
Percy Islands, M.Q. (*T. coppingeri*).
Moreton Bay, S.Q. (*T. velox*).

Body deeply subovate and strongly compressed, the dorsal and ventral contours symmetrical or nearly so, the former linear or gently rounded and moderately acclivous from the frontal region to the soft dorsal, the latter feebly convex from the chin to the ventrals, between which and the anal it is linear or slightly emarginate; width of body 3 to 3·25 in its depth, which is 2·3 to 2·7 in its length and from one third to five ninths more than the length of the head; abdominal region moderate, 1·4 to 1·67 in the length of the anal; caudal peduncle one third to one half longer than deep, its least depth one tenth less to two ninths more than the eye-diameter. Head rather small, its length 3·45 to 4 in that of the body, its width 1·75 to 2 in its depth, which is 1·3 to 1·1 in its length; cranio-nuchal keel well developed. Snout short, pointed in the young, becoming blunter with age, the upper profile rounded, its length from one sixth less to as long as the eye-diameter, which is 3·2 to 3·85 in the length of the head; adipose lid little developed; interorbital region elevated and sharply rounded, its width as much as to one eighth more than the eye-diameter. Jaws equal in the adult, the upper the longer in the young; maxillary extending to below the middle or anterior border of the pupil, its length 2·45 to 2·85 in that of the head, the width of its truncate distal extremity from one fifth more than to twice its distance from the eye and 2·8 to 3·6 in the eye-diameter. Preopercle with broadly rounded angle, the membranous border crenulate in the young, entire in the adult, the hinder limb inclining slightly forwards.

Both jaws with a narrow band of rather coarse villiform teeth, the outer row slightly enlarged; vomer with a triangular patch, palatines with a narrow band of similar teeth; pterygoids and tongue toothless.

Scales small and rounded on the trunk, becoming gradually larger and more ovate posteriorly; cheeks and postorbital region scaly; rest of head and nuchal ridge naked. Lateral line with a feeble curve anteriorly, thence straight or gently sinuous to the caudal fin, the pores 88 to 95.

Dorsal fin with vi, i 23 to 26 rays; procumbent spine, strong and exposed; spines short and separate except in the very young, graduated evenly from the front, the last 1·4 to 2 in the eye-diameter. Soft dorsal originating from one fifth to a little nearer to the root of the caudal than to the tip of the snout, the

anterior rays produced, the 1st the longest, varying in length from 3·66 in the young to 2·9 in the adult, or even in individual cases to 2·6 in the body-length, and extending when depressed to between the base of the antepenultimate and the tip of the last ray, which is not produced. Caudal fin very long and deeply forked, the lobes acute, the upper the longer, 2·65 to 2·15 in the body-length. Anal fin with ii. i 21 to 25 rays, originating below the 3rd or 4th dorsal ray, its lobe as high as or higher than that of the soft dorsal, 3·65 to 2·2 in the length of the body and extending when depressed to between the last ray and the proximal fifth of the lower caudal lobe. Pectoral pointed, with 17 rays, its length 5 to 6·2 in that of the body, 4th ray longest, reaching in the young to above the free anal spines, in the adult not to the level of the vent. Ventral small, inserted well behind the pectoral-base, its length 1·33 to 1·8 in that of the pectoral and 7 to 11·25 in that of the body; 2nd ray longest, extending to the vent or not quite so far.

Gill-rakers moderately long and strong, 4 to 8 + 13 to 15 on the anterior arch, the longest 6·5 to 7 in the length of the head and as long as the gill-fringes. Vent midway between the origin of the ventral and the 1st or 2nd anal ray.

Upper surfaces dark blue-gray, shading to silvery below the lateral line, the breast and abdomen milk white; a series of six or seven vertically oval dark spots on each side; these are mostly above the lateral line only the anterior two, or rarely three, crossing it inferiorly, though one or more of the others may touch it; these spots are sometimes obscure or, though rarely, absent in the young. Dorsal, caudal, and anal lobes indigo blue. (*Botla:* the native name of the species at Vizagapatam according to Russell.)

Described from a fine series of six graded specimens, measuring respectively 131, 141, 155, 225, 240, and 328 millim., obtained in Moreton Bay, and presented to the Queensland Museum by Messrs. Jolliffe, Palmer (3), and the Amateur Fishermen's Association of Queensland (3).

Specific name:—We have found it necessary to reinstate Shaw's name for our fish in the place of the more commonly employed *T. russellii,* because both Shaw and Valenciennes founded their names on Russell's figure, and there can be, therefore, no justification for rejecting the earlier name.

Historical:—First described and figured by Russell in 1803, it does not seem to have attracted further notice until thirty years had elapsed, when Valenciennes recorded a specimen sent to him by Sonnerat from Pondicherry, which he believed to be the same species as Russell's "*botla-parah.*" About the same time he received from Java, through those energetic and unfortunate young explorers Kuhl and van Hasselt and simultaneously from Pondicherry through Dussumier, a trachinote, which he separated from his *T. russelii* under the name *T. oblongus.* No valid characters distinguishing the two forms are, however, given, and they are now generally admitted to be identical. Bleeker and Günther,

however, followed Valenciennes in upholding the validity of *T. oblongus,* and the latter even went so far as to unite *T. russellii* with *T. bailloni,* even though years previously Valenciennes had correctly pointed out the distinctive characters of each species. This mistake of Günther was destined to cause much confusion among the earlier Australian ichthyologists and has indeed only been finally interred within the last few years, even though Day in 1876 had fully exposed the error and vindicated the claims of the two forms to specific separation. In 1886, shortly after our arrival in New South Wales and before we had had an opportunity of examining the species, we followed Macleay in catalogning *T. bailloni* as a Port Jackson fish, but at the same time emphasized our dissent from the Güntherian dictum by omitting *T. russellii* from the synonymy of that species. Seven years later, however, having in the interim handled many specimens we for the first time established the presence of *T. russellii* in Australian waters. Meanwhile Günther, having obtained from the Coast of Queensland a six inches specimen from which the usual spots were absent, described it as new under the name *T. coppingeri,* dedicating it to Staff-Surgeon R. W. Coppinger of H.M.S. "Alert," then on survey duty off the Australian Coast, who was responsible for its collection. A comparison of our respective descriptions, after setting aside as negligible the presence or absence of lateral spots, fails to reveal any structural differences, save the slightly greater depth and the much smaller eye; the latter character, if correctly stated, is the more extraordinary as Günther's specimen was young, and we are inclined to think that the artist, whose delineation of the outside eye makes it 4 (not 4·5) in the length of the head, is more correct than the describer; in a six inches specimen now before us the measurements are as 1 to 3·5. *T. coppingeri* may, therefore, be definitely included in the synonymy of *T. botla.* In 1904 we were disagreeably astonished to find that Waite had reinstated *T. bailloni* as a New South Wales species to the exclusion of *T. botla*; it was doubtless due to this that Stead two years later included *T. bailloni* in his catalogue of the Edible Fishes of Australia, but in his next publication he corrected his error and reverted to *T. russellii* as the New South Wales representative. We take this opportunity of affirming that there is no authentic record of the occurrence of *T. bailloni* on the coast of the southern State. With regard to our *T. velox,* after handling many specimens from Moreton Bay and its neighbourhood, we have come to the conclusion that the species was erroneously formed on an unusually vigorous individual, the virility of which chiefly revealed itself in the increased number of the dorsal and anal fin-rays and the extraordinary length of the soft dorsal, caudal, and anal lobes. How greatly these differences altered the habit of the individual the following table, comparing *T. velox* with an average specimen of about the same size will show, the second set of figures belonging to the spurious *T. velox.* "Length of body in millimeters from tip of snout to end of hypural bone 240, 225; number of soft rays in the anal 22, 26; length of dorsal lobe to that

of body 2·92, 2·58; of upper caudal lobe to same 2·37, 2·15; of anal lobe to same 2·82, 2·21. We think, nevertheless, that *T. velox* should also be reduced to a synonym of *T. botla*.

Uses:—In 1893 we wrote—"As a table fish they cannot be highly recommended, nevertheless they are by no means unpalatable when eaten perfectly fresh." Personally we have nothing to add to this verdict, but we have met with several persons who consider it an excellent fish; it should, however, be served boiled with a rich brown or oyster sauce. Stead remarks—"As an edible fish it is of considerable value, and as it is very pleasing to the eye, its importance in our future fisheries should be very much greater than at present." From the sportsman's viewpoint it is a somewhat negligible quantity, the irregularity of its movements making its capture a matter of pure accident; still surf-fishers after bream occasionally meet with it and find that once hooked with a light rod and fine tackle, the swallowtail with its rapid movements and sudden twists and turns is no mean antagonist, but is capable of calling forth the very highest powers of our most experienced anglers.

Food:—The greater part of their food, as ascertained by dissection, consists of small fishes and the fry of larger ones, with which are often mingled small swimming crabs and squid.

Range:—From the Persian Gulf through the Seas of India eastward to the Malay Archipelago; thence northward to Formosa, where it was collected at Tainan by Dr. Hans Sauter, though it appears to have so far eluded the vigilance of Philippine collectors. To the eastward we recorded it as long as twenty four years ago from Lord Howe Island, whence a specimen was sent to the Australian Museum by Mr. T. R. Ieely. Our knowledge as to its distribution on the Australian Coast is extremely unsatisfactory; Macleay does not mention it at all, but as he merely copied Günther in all things pertaining to fishes, it is probable that his records of *T. bailloni* should be credited to this species. All the trustworthy continental records of *T. botla* come from Eastern Australia, with the single exception of a specimen captured at Bernier Island, W.A., as noted by McCulloch. The earliest Australian record of this species, by a name which unquestionably belongs to it, was published by the writer in 1893; but if we are right in considering that Alleyne and Macleay's Percy Islands record and that of Castelnau from Port Jackson, both as *T. bailloni*, as well as Günther's *T. coppingeri*, also from the Percy Islands, actually apply to this fish, our claim has been thrice antedated by many years. Our record, however, had the merit of fixing definitely the south-eastern range of the "dart," as the species is known in the Sydney markets, at Port Jackson, where, however, it was looked upon more or less as a straggler. But since then Stead informs us of its occurrence in Botany Bay, a few miles further south, where "during the winter of 1907 several baskets, of 75 lb. weight apiece, were taken at one haul." This, however, is a most unusual occurrence, and it is not until we get as far north

as Lake Macquarie, whence consignments frequently find their way to the Sydney markets, that it becomes a tolerably well known fish. Northward from thence it increases rapidly in numbers and importance as a food fish, and on the coasts of Northern New South Wales and Queensland it is abundant, though curiously enough Kent makes no mention of either it or its congeners in his chapters on Queensland food-fishes. On the South Queensland Coast it is common at all seasons, but especially during the winter months, when large shoals of them accompany the vast schools of sea mullet (*Mugil cephalus*) at that time skirting our shores on the way to their breeding grounds, though unlike them the swallow-tails shown no indications of spawning. The association in fact seems to be purely fortuitous, or it may be simply caused by a certain similarity of habit, which induces two species so dissimilar in their mode of life to herd together for mutual protection. Personally we have collected the species at Coolangatta, Southport, Moreton Bay, and Great Sandy Strait, but further north we only know of it from hearsay, no example having been included in any collection, nor did it once occur during the cruises of the "Endeavour." Macleay (1881) records it from "Torres Straits (Chevert Expedition)," but this is palpably a mistake, the Chevert examples having, as previously stated, been taken at the Percy Islands. Without an examination of the specimen it is impossible to determine to which species Macleay's Port Moresby fish belongs, since McCulloch (*loc. cit.*) records the occurrence of the true *T. bailloni* at Murray Island, this being the only authentic Queensland locality at present known to us. Turning westward to the Archipelago we find that it was unknown to Cantor, while Bleeker only obtained it at Java, whence it had been sent previously by Kuhl and van Hasselt to Paris, as reported by Valenciennes under the name *T. oblongus*. The British Museum possesses an example from Sumatra: Day, however, failed to obtain it at the Andamans, but records it as common on both sides of the Indian Peninsula, while Boulenger subsequently increased its western range as far as Maskat on the Persian Gulf. Taken altogether the distribution of the species as sketched out above is unsatisfactory, for the immense hiatus between India and Eastern Australia, denoting an area which has been so thoroughly exploited, can not be regarded as having been satisfactorily filled, nor can the cause be satisfactorily accounted for.

Dimensions:—The usual size of specimens seen in the Brisbane markets may average from 300 to 350 millim., but we have seen a specimen taken in Nerang Creek which measured 525 millim., and Day records a Canara specimen of 560, but these sizes are, we imagine, unusual in this species.

Illustration:—Our figure is taken from a magnificent example, measuring 328 millim., and captured at Mud Island, Moreton Bay, by Mr. T. Jolliffe, to whose liberality we are indebted for the specimen.

REVIEW OF THE QUEENSLAND POMACANTHINAE.

By J. Douglas Ogilby.

The *Pomacanthinæ* may be briefly diagnosed as "chætodontoid fishes furnished with a strong spine at the angle of the preopercle."

The genus *Holacanthus* Lacépède comprises a number of species varying greatly *inter se*. It is not, therefore, surprising that authors have made several attempts to split the genus into sections of more or less doubtful value. Swainson first proposed to separate *H. lamarckii* Lacépède under the name *Genicanthus*, but this was quite unnecessary, that species being absolutely congeneric with Lacépède's type *H. tricolor*, as that author recognized by placing the two in his "premier sous-genre." Kaup next proposed the genus *Centropyge*, with *H. tibicen* Cuvier & Valenciennes as its type, under the erroneous impression that the species possessed four anal spines; otherwise being similar to *Holacanthus*, it too becomes a synonym of that genus. Bleeker then, in 1877, made a more valuable contribution to the literature of the genus by dividing it into three—*Chætodontoplus*, *Holacanthus*, and *Acanthochætodon*. The three principal characters relied on in support of his views are—the amount of attachment between the gill-membranes and the isthmus, the form of the body, and the size of the scales. The two first show such wide divergence as to be unreliable, and so become negligible as factors in the subdivision of the genus, but in my opinion the third may well be utilised for that purpose, as indeed had been partly done by Günther many years previously for the sectional separation of the species. *Angelichthys* Jordan & Evermann, having as its type the *Chætodon ciliaris* of Linnæus, does not seem to require recognition.

The present review deals with seven species, only that number having been as yet recorded from our coast; there are, however, at least five other Indo-Pacific species which should eventually be found in Queensland seas; these are printed in italics in the accompanying list.

Holacanthus flavissimus Cuvier & Valenciennes.
,, bicolor Bloch.
,, sexstriatus Kuhl & van Hasselt.
,, imperator Bloch.
,, semicirculatus Cuvier & Valenciennes.
,, *bispinosus* Günther. Amboina to Tahiti.

Holacanthus tibicen Cuvier & Valenciennes. Celebes to Lord Howe Island.[1]

„ *navarchus* Cuvier & Valenciennes. Moluccas to New Guinea (Macleay).

„ *diacanthus* Boddaert. India to Tahiti.

„ *nicobariensis* Schneider. India to Tahiti.

CHÆTODONTOPLUS DUBOULEYI Günther.

„ CONSPICILLATUS Waite.

Key to the Genera.

a[1]. Exposed portion of scale smoothly and horizontally striated, without or with a spinulose border, the basal margin lobulate; gill-membranes narrowly attached to isthmus .. HOLACANTHUS.

a[2]. Exposed portion of scale everywhere densely spinulose; the basal margin without lobules; gill-membranes more broadly attached to isthmus .. .. .. CHÆTODONTOPLUS.

HOLACANTHUS Lacépède.

Holacanthus Lacépède, Hist. Nat. Poiss., iv, 1802, p. 525 (*tricolor*); Günther, Brit. Mus. Catal. Fish., ii, 1860, p. 42; Bleeker, Atlas Ichth., ix, 1877, p. 58; Jordan & Evermann, Fish. North and Mid. Amer., pt. 2, 1898, p. 1682.

Genicanthus Swainson, Classif. Fish., ii, 1839, p. 212 (*lamarckii*).

Centropyge Kaup, Arch. f. Nat., xxvi, 1860, p. 138 (*tibicen*).

Acanthochætodon Bleeker, Arch. Néerl. Sci. Nat., xi, pt. 2, 1876, p. 308 (*lepidolepis*); id., Atlas Ichth., ix, 1877, p. 67.

Angelichthys Jordan & Evermann, Check-list North Amer. Fish., 1896, p. 420 (*ciliaris*); idd., Fish. North and Mid. Amer., pt. 2, 1898, p. 1684.

Body ovate or elevated, strongly compressed. Scales moderate or small, adherent, ciliated, the exposed portion covered with smooth horizontal striæ, which may be coarse and regular (as in *bicolor*) or fine and irregular (as in *sexfasciatus*), with or without a narrow spinulose border, and with the basal margin more or less conspicuously lobulate. Lateral line complete or incomplete, the tube simple or branched. Head short and deep, with declivous profile, pointed snout, and wide preorbital, wholly scaly. Mouth terminal and protractile, with narrow transverse cleft, the jaws equal or the lower the longer; dilated portion of maxillary more or less fully exposed, scaly. Nostrils superolateral, approximate, the posterior open and circular, the anterior valvular and much nearer to the eye than to the tip of the snout. Eyes small, median or anteromedian, high, the interorbital region moderately wide and usually elevated. Preorbital denticulated or smooth at least in the adult; preopercle usually serrated. One dorsal fin with xii to xvi 15 to 23 rays; procumbent spine present or absent; spines strong, pungent, usually graduated; soft portion of fin more

[1] In the Records of the Australian Museum, vol. iii. p. 203, Waite announces the occurrence of this species at Lord Howe Island, and claims it as "an addition to the Australian fauna." This is, however, incorrect, he having somehow overlooked my record of ten years previously published in the Proceedings of the Linnean Society of New South Wales, vol. xiv. p. 1028. The same remarks apply to *Brama raii* and *Cristiceps australis* and in a lesser degree to *Chironemus marmoratus* and *Trachinotus botla* (*russellii*), while *Pegasus draconis*, also there recorded, is omitted wholly from his list.

or less distinctly angulated. Caudal usually rounded, more rarely emarginate, with the outer rays produced. Anal similar to the soft dorsal, with iii 15 to 22 rays. Pectoral obtusely pointed, with 15 to 20 rays. Ventrals inserted below or slightly behind the pectoral base, close together, with a moderate or strong spine and 5 rays, the outer of which is usually produced, without accessory scale. Gill-openings wide; gill-membranes separate, narrowly attached to the isthmus; branchiostegals six; pseudobranchiæ well developed; gill-rakers minute; air-bladder large, posteriorly bifurcate. Pyloric cæca numerous.

Etymology:—Greek, ὅλος, whole or perfect; ἄκανθα, a spine.

Coastal fishes of small or moderate size from the Indian, Pacific, and Western Atlantic Oceans. About 40 species known.

Key to the Queensland Species.

a^1. Scales moderate, in less than 55 transverse series (*Holacanthus*).

b^1. Habit holocentriform; lepidosis without squamulæ.

c^1. Eye longer than the snout; lateral line incomplete; dorsal with 14 spines, the soft portion obtusely pointed .. .. *flavissimus.*

b^2. Habit chætodontiform; lepidosis with scattered squamulæ.

d^1. Eye about as long as snout; lateral line incomplete; dorsal with 15 spines, the soft portion acutely pointed; pectoral with 16 or 17 rays .. .. .. *bicolor.*

d^2. Eye much shorter than snout; lateral line complete; dorsal with 13 spines, the soft portion obtusely pointed; pectoral with 19 spines .. .. .. *sexstriatus.*

a^2. Scales small, in more than 70 transverse series (*Acanthochætodon*).

e^1. Dorsal fin with 14 spines; lateral line complete.

f^1. Eye much shorter than snout; soft dorsal acutely pointed .. .. *imperator.*

f^2. Eye rather longer than snout; soft dorsal rounded or obtusely pointed .. .. *semicirculatus.*

HOLACANTHUS FLAVISSIMUS Cuvier & Valenciennes.

Holacanthus flavissimus Cuvier & Valenciennes, Hist. Nat. Poiss., vii, 1831, p. 197; Jordan & Seale, Bull. U.S. Bur. Fisher., xxv, 1905, p. 348.

Holacanthus luteolus (Parkinson) Cuvier & Valenciennes, ibid., p. 198.

Holacanthus cyanotis Günther, Brit. Mus. Catal. Fish., ii, 1860, p. 517; id., Fisch. d. Südsee, pt. 2, 1874, p. 52, pl. xl, fig. A.; Ogilby, Mem. Queensl. Mus., i, 1912, p. 54.

Holacanthus monophthalmus Kner, Sitz. Akad. Wien, lvi, 1867, p. 714, fig. 2 (*juv.*); id., ibid., lvii, 1868, p. 16.

Holacanthus ocularis Peters, Mon. Akad. Berlin, 1868, p. 147.

Holacanthus sphynx de Vis, Proc. Linn. Soc. N. S. Wales, ix, pt. 3, 29 Nov. 1884, p. 457.

Type localities:—Ullie Island, Caroline Group (*flavissimus*); Tahiti, Society Group (*luteolus*); Aneiteum, New Hebrides Group (*cyanotis*); Raiatea, Society Group (*monophthalmus*); South Sea (*ocularis*); Coast of Queensland (*sphynx*).

Depth of body 1·8 in its length; dorsal contour slightly more elevated than the ventral, its anterior profile from snout to nape evenly convex and decreasingly acclivous, thence rising slightly by a further convexity to the 7th dorsal spine, beyond which it descends in a long gentle curve to the caudal

peduncle; ventral contour gently rounded from the lip to the ventral, thence linear and feebly declivous to the anal, the base of which is evenly convex; least depth of caudal peduncle 7·1 in the length of the body. Width of head 1·4 in its length, which is 1·15 in its depth and 3·66 in the body-length. Diameter of eye one sixth more than the length of the snout, which is 2·85 in that of the head; interorbital region convex but not elevated, as wide as the snout is long. Jaws equal, maxillary extending to below the anterior border of the eye. Preorbital with 3 or 4 strong teeth, its width 1·9 in the eye-diameter. Hinder limb of preopercle inclined backwards and feebly serrated; a strong retrorse tooth on the lower limb close to the spine, which is short, 2·85 in the length of the head, and extends to below the border of the opercle.

Scales as in *H. bicolor*, but without squamulæ, in 46 series above the lateral line, and in 6/1/23 between the spinous dorsal and the vent. Lateral line incomplete, terminating at the base of the 11th dorsal ray.

Dorsal fin originating above the base of the pectoral, with xiv 15 rays, the soft portion 1·75 in the length of the spinous; spines graduated, the first moderately developed, 2·6 in the last, which is 1·2 in the soft fin and 4·55 in the body-length; soft dorsal with obtusely angular outline, the posteromedian rays the longest, extending to beyond the level of the middle of the caudal; procumbent spine protruding. Caudal fin rounded, the middle rays longer than the outer and 3·8 in the length of the body. Anal with iii 17 rays, originating below the 12th dorsal spine; spines much stronger than those of the dorsal, the 1st long, 1·45 in the last, which is 1·15 in the longest ray and rather less than the last dorsal spine; soft anal similar to but shorter, lower, and less pointed than the soft dorsal, so that the hinder border is obliquely linear. Pectoral with 16 rays, its length 3·5 in that of the body; 4th ray longest, extending to below the 7th dorsal spine. Ventral much longer than the pectoral, the spine half as long as the outer ray, which is much produced, 2·6 in the body-length, and reaches to the base of the 1st anal ray.

Coloration (1) of our specimen after long immersion and exposure:—Uniform pearl gray, the head and shoulders with a dirty yellow tint.

(2) Of fresh specimen *fide* Jordan and Seale:—"Clear deep yellow, citron-yellow below; fins all the same; dorsal, anal, and caudal with very narrow bright blue edge; a deep blue ring around the orange eye; a deep violet-blue on opercle with an orange edge behind; preopercular spines and two bars across the chin slaty blue; two slaty spots on breast; upper lip slaty."

Etymology:—Latin: *flavissimus*, superlative of *flavus*, yellow.

Reg. No. in Queensland Museum of specimen described:—I. 11/106.

Measurements of a Queensland example:—See p. 116.

Range:—From the East Coast of Queensland northward to the Caroline Group and eastward to the Paumotu Archipelago.

Cuvier and Valenciennes first gave a place in literature to this species from drawings by Mertens and Parkinson, the former's subject having been taken at Uléa (Ullie Island), one of the Carolines, the latter's at Tahiti in the Society Group, but the descriptions (if such they can be called) taken from these sources, under the names *H. flavissimus* and *H. luteolus*, are valueless, and might very well have been disregarded. The species does not appear to have been noticed again until 1860, in which year Günther (1), as *H. cyanotis*, gave the first recognizable description from a specimen collected by Macgillivray at Aneiteum, New Hebrides. Within the next decade it received two new names from Kner and Peters respectively, the former describing a young example from Raiatea, Society Group, as *H. monophthalmus*, the latter somewhat vaguely from the "South Seas" as *H. ocularis*, while Kner in the same year reported his fish from Savai, Samoa. Some years later Günther (2) added the Paumotu Archipelago, Hervey and Kingsmill Islands, and the Fiji Group to the known localities, and at a still later date de Vis gave it yet another name, describing it from the Queensland Coast as *H. sphinx*. Finally Jordan and Seale recorded it as being "rather common about the coral reefs of Samoa," but were unable to add any further localities to its distribution.

Dimensions:—A small species, not exceeding 100 millim. in total length.

Remarks:—Described from one of the Queensland specimens, measuring 81 millim., and in but moderate condition. The other example has been ruined by bad mounting. This pretty little species is easily separable from the other Queensland pomacanthins by its symmetrical head and holocentriform habit.

HOLACANTHUS BICOLOR (Bloch).

Color-sousounan Renard, Poiss. Moluques, i, 1718, pl. xix, fig. 106.

Ikan Batoe-rocpa-satong Valentyn, Amboina, iii, 1724, fig. 244.

Chætodon bicolor Bloch, Ausl. Fisch., iii, 1785, pl. 206, fig. 1; East Indies; Bonnaterre, Encycl. Méth., Ichth., p. 93, pl. xcvii, fig. 397; Schneider, Bloch Syst. Ichth., 1801, p. 218.

Holacanthus bicolor Lacépède, Hist. Nat. Poiss., iv, 1802, pp. 527, 533, 536; Cuvier & Valenciennes, Hist. Nat. Poiss., vii, 1831, p. 168; Bleeker, Nat. Tijds. Nederl. Ind., v, 1853, p. 77; id., Act. Soc. Sci. Ind. Neerl., viii, 1860, Sumatra, p. 26; Günther, Brit. Mus. Catal. Fish., ii, 1860, p. 50; Bleeker, Nederl. Tijds. Dierk., i, 1863, pp. 234, 252; id., Versl. Akad. Amsterdam, xvi, 1864, p. 360; id., Nederl. Tijds. Dierk., ii, 1865, pp. 100, 190, 287; id., Versl. Akad. Amsterdam (2) vii, 1873, p. 39; Günther, Fisch. d. Südsee, pt. 2, 1874, p. 51, pl. xxxix, fig. B; Bleeker, Verh. Akad. Amsterdam, xvii, 1877, Chæt., p. 127; id., Arch. Néerl. Sci. Nat., xii, 1877, p. 22; id., Atlas Ichth., ix, 1877, p. 61, pl. cccIxix, fig. 3; id., Arch. Néerl. Sci. Nat., xiii, 1878, p. 45; Macleay, Proc. Linn. Soc. N.S. Wales, vii, pt. 2, 1882, p. 244; id., ibid., viii, pt. 2, 1883, p. 263; de Vis, Proc. Linn. Soc. N.S. Wales, ix, pt. 3, 1884, p. 457; Weber, Semon Zool. Forsch., 1895, p. 264; Jordan & Seale, Bull. U.S. Bur. Fisher., xxv, 1905, p. 348; iid., ibid., xxvi, 1906, p. 34; Jordan & Richardson, Bull. U.S. Bur. Fisher., xxvii, 1907, p. 269; iid., Bur. Sci. Manila, i, 1910, p. 41.

Type locality:—East Indies.

Depth of body 1·9 to 2 in its length; dorsal contour rather more elevated than the ventral, its anterior profile linear and strongly acclivous to above the middle of the eye, thence by a moderate convexity to about the 5th dorsal spine, beyond which it descends in a long gentle curve to the middle of the soft dorsal, whence it bends more abruptly downwards to the caudal peduncle; ventral contour feebly convex between the chin and the ventrals, thence linear to the anal, the base of which is evenly convex; least depth of peduncle 6·75 in the length of the body. Width of head 1·6 in its length, which is 1·15 to 1·3 in its depth and 3·7 to 3·85 in the body-length. Diameter of eye 1·15 in the length of the snout, which is 2·7 in that of the head; interorbital region as wide as and one sixth less high than the eye-diameter. Maxillary extending to below the anterior nostril. Preorbital coarsely denticulated, its width 1·2 in the eye-diameter. Hinder limb and posterior half of lower limb of preopercle strongly serrated, the former inclined somewhat backwards; spine long and curved, 1·75 in the length of the head, and extending to beyond the middle of the pectoral base; subopercle serrated.

Scales ctenoid, the exposed portion coarsely and horizontally striated, the striæ smooth, each terminating in a stout spinule, the basal portion with the margin conspicuously lobulate; in 50 series above the lateral line and 6/1/18 or 19 between the spinous dorsal and the vent. Scattered squamulæ present. Lateral line incomplete, terminating near the base of the last dorsal ray, the tubes simple.

Dorsal fin originating above the opercle, with xv 16 rays, the soft portion 2·6 in the length of the spinous; spines graduated, the 1st well developed, 1·75 in the last, which is 1·8 in the longest ray and 6·1 to 6·33 in the body-length; procumbent spine present; soft dorsal with acutely pointed outline, the 8th and 9th rays longest, extending to beyond the level of the middle of the caudal, its hinder border feebly concave. Caudal fin rounded, the middle rays longer than the outer and 4·1 in the length of the body. Anal fin with iii 18 rays, originating below the 10th dorsal spine, the 1st spine 1·33 in the last, which is 1·8 in the longest ray and 6·25 to 6·5 in the body-length; soft anal similar in height and shape to but much longer than the soft dorsal. Pectoral with 16 or 17 rays, its length 3·9 to 4 in that of the body; 5th ray longest, extending to below the 7th dorsal spine. Ventral much longer than the pectoral, the spine 1·6 in the outer ray, which is well produced, 3·35 in the body-length, and reaches beyond the base of the 1st anal spine.

Gill-rakers 3 + 12, short and pointed, except the anterior pair on the upper branch, which are rudimentary.

Posterior half of trunk and tail deep blue-black, the color continuous on the soft dorsal and anal and on the interspinous membrane of the anal and the

contiguous part of the dorsal; rest of trunk and head, membrane of the anterior dorsal spines, pectorals, ventrals, caudal, and adjoining strip of the peduncle golden yellow; a broad blue-black arcuate band between the eyes, continued across the cheek as an obscure dull blue evanescent band; lips and chin dull blue; dorsal, anal, ventral, and preopercular spines bluish-white.

Etymology:—Latin: *bicolor*, of two colors.

Reg. No. in Queensland Museum of specimens described:—I. 14/1840-1.

Measurements of a typical Queensland example:—See p. 116.

Range:—Malay Archipelago eastward to Samoa.[2]

Through some confusion with the West Indian *Holacanthus tricolor* Bloch and his immediate followers gave the distribution of this species as "les deux Indes," a mistake which was not corrected until the publication by Valenciennes of the seventh volume of the "Histoire Naturelle des Poissons." It was not obtained by Cantor in Malaysia, but Bleeker records it from numerous localities—Sumatra, Flores, Solor, Amboina, Ternate, Ceram, Saparoea, Banda, Arou, and New Guinea. To these Günther added the Solomon and Navigator Groups, from the latter of which Jordan and Seale also received it. Macleay recorded it from Port Moresby, British New Guinea, and subsequently from the D'Entrecasteaux Archipelago, to the eastward of the Territory, but he was unable to include it in the Appendix to his "Descriptive Catalogue of Australian Fishes," published in 1884. Later, however, in the same year de Vis announced the occurrence of two specimens from the Queensland Coast; in addition to these the Queensland Museum possesses two other local examples labeled "Moreton Bay." Finally the Endeavour trawled five specimens on fine dark sand in 33 fathoms three and a half miles south-east from Double Island Point.

How acquired:—The two specimens originally recorded by de Vis were collected by Mr. Kendall Broadbent on the North Queensland Coast; of those from Moreton Bay no further information is procurable.

Dimensions:—A small species, attaining a length of 120 millim.

Remarks:—Described from the Moreton Bay specimens above mentioned, which respectively measure 97 and 105 millim.

HOLACANTHUS SEXSTRIATUS Kuhl & van Hasselt.

Holacanthus sexstriatus (Kuhl & van Hasselt) Cuvier & Valenciennes, Hist. Nat. Poiss., vii, 1831, p. 194; Bleeker, Nat., Gen. Arch. Nederl. Ind., i, 1844, p. 520; id., Verh. Batav. Gen., xxiii. 1850, Chæt., p. 25; id., Nat. Tijds. Nederl. Ind., iii, p. 57; id., Act. Soc. Sci.

[2] Günther, relying on Garrett, records the species from the Hawaiian Islands, but the keen-eyed American collectors of those much-exploited isles having failed to rediscover it, the record must be taken as doubtful.

Indo-Neerl., viii, 1860, Celebes, p. 35; Günther, Brit. Mus. Catal. Fish., ii, 1860, p. 49; Kner. Reise Novara, Zool., i, Fische, pt. i, 1865, p. 104; Bleeker, Nederl. Tijds. Dierk., ii, 1865, p. 287; Alleyne and Macleay, Proc. Linn. Soc. N.S. Wales, i, pt. 2, 1877, p. 277; Bleeker, Verh. Akad. Amsterdam, xvii, 1877, Chæt., p. 140; id., Arch. Néerl. Sci. Nat., xii, 1877, p. 22; id., Atlas Ichth., ix, 1877, p. 66, pl. ccclxxii, fig. 2; Macleay, Proc. Linn. Soc. N. S. Wales, ii, pt. 4, 1878, p. 352; id., ibid., v, pt. 3, 1881, p. 395 (*after Günther*); id., ibid., vii, pt. 2, 1882, p. 244.

Chætodon resimus Gronow, Catal., ed. Gray, 1854, p. 71: "in Oceano Indico."

Type locality:—Java.

Depth of body 1·65 to 1·8 in its length; dorsal contour a little less elevated than the ventral, its anterior profile linear and moderately acclivous from the lip to above the anterior third of the eye, thence rising more abruptly by a high convexity to the origin of the spinous dorsal, along the base of which it is feebly convex, while that of the soft forms an even curve to the caudal peduncle; ventral contour feebly concave to the throat, thence evenly rounded to the peduncle, the least depth of which is 7·1 in the length of the body. Width of head 1·3 to 1·4 in its length, which is 1·2 in its depth and 3·9 in the body-length. Diameter of eye 2 to 2·2 in the length of the snout, which is 2·1 in that of the head; interorbital region one third to two thirds wider and one eighth to one fifth higher than the eye-diameter. Maxillary not extending to below the anterior nostril; lower jaw projecting. Preorbital entire, its width one third to three sevenths more than the eye-diameter. Hinder limb of preopercle inclined well backwards and rather weakly serrated, lower limb with several strong teeth decreasing in size from behind; spine long and conspicuously grooved, 2 to 2·25 in the length of the head, and extending beyond the pectoral axil.

Scales feebly ctenoid, the exposed portion with fine often broken horizontal striæ and a narrow spinulose inframarginal band, the basal border inconspicuously lobulate, in 48 to 50 series above the lateral line and in 7 or 8/1/22 to 24 between the spinous dorsal and the vent; squamulæ present near the lateral line, which is complete and follows the contour of the back; tubes with an ascending and a descending lobule, not extending to the margin of the scale.

Dorsal fin originating above the pectoral axil, with xiii (rarely xiv) 20 rays, the soft portion 1·5 in the spinous; spines graduated, the 1st short, 3·5 in the last, which is 1·85 to 2·1 in the longest ray and one fifth to one sixth of the body-length; soft dorsal with obtusely cuneiform outline, the 5th and 6th rays longest, extending to the level of between the middle and end of the caudal fin, its hinder border obliquely truncate. Caudal fin gently rounded, the middle rays a little longer than the outer and 4·25 to 5 in the length of the body. Anal fin with iii 18 or 19 rays, originating below the 8th dorsal spine, the 1st spine 2·2 in the last, which is 1·9 to 2·05 in the 7th ray and 6·15 to 6·7 in the body-length; soft anal as long as but much lower and more obtuse than the soft dorsal, barely reaching to a level with the middle of the caudal. Pectoral with 19 rays, its length 3·75 to 4 in that of the body, the 4th ray longest, extending to below

the 7th dorsal spine. Ventral from two thirds to nine tenths longer than the pectoral, the spine 2·4 in the outer ray, which is much produced, 2 to 2·4 in the body-length, and reaches to between the 2nd anal spine and the 3rd ray.

Gill-rakers 4 + 14, the 3 anterior on the upper limb rudimentary, the rest very short but pointed.

Golden green, with six or seven purple transverse bands as wide as or somewhat narrower than the interspaces, in the smaller example these are continued on the bases of the dorsal and anal fins, or across the abdomen, or around the peduncle, but in the larger example are wholly confined to the sides of the body; each of the scales on the lighter body-bands has also a dull blue central spot. Head and throat purple, uniform or blue-spotted, the former with a wide silvery band extending downwards from the nape to or nearly to the preopercular spine and entering the eye. Spinous dorsal golden green; soft dorsal, caudal, and anal purplish brown, profusely adorned with circular blue spots; pectorals brown, with a narrow suffused grayish border; ventrals uniform purple.

Etymology:—Latin: *sex*, six; *striatus*, striped.

Reg. No. in Queensland Museum of the specimens described:—I. 13/1455-6.

Measurements of a typical Queensland example:—See p. 116.

Range:—Seas of the Malay Archipelago eastward to the Gulf of Papua and North-Eastern Queensland.

Described originally from a Javanese example, sent to Paris by Kuhl and van Hassett, Bleeker early extended its range in a northerly direction to Singapore, where, however, it is probably scarce since it was unknown to Cantor, much of whose material was collected there. Subsequently the great Dutch naturalist obtained specimens from Celebes and Amboina, and in 1877 he wrote in the Atlas Ichthyologique, "Le sexstriatus n'a pas été trouvé jusqu'ici hors l'Insulinde." Even within these limits it does not appear to be generally distributed, as it has not been recorded from Borneo, nor have the American collectors been more successful in the Philippines; from the Arou Islands too, which have been fairly well exploited by Bleeker, Weber, and myself, it is as yet unrecorded, and it is distinctly strange that so large and striking a species should have entirely escaped the notice of the earlier Malayan historians, such as Ruysch, Renard, and Valentyn, from which we may infer that it is not a common fish among the Spice Islands. The earliest record of its occurrence in Australia was published coincidentally with Bleeker's remark above quoted, by Alleyne and Macleay on the strength of "several large specimens taken near Cape Grenville" by members of the Chevert Expedition: incidentally this is the most southerly station from which it has been as yet recorded; in the following year Macleay received it from Port Darwin, N.T. and two years later from Port Moresby, B.N.G. Our specimens, three in number, come from Darnley Island.

How acquired:—Collected by Dr. J. R. Tosh. and presented by him to the Queensland Museum.

Dimensions:—According to Bleeker this species attains a length of 500 millim. (On y voit quelquefois des individus d'un demi-métre de long.)

HOLACANTHUS IMPERATOR (Bloch).

Japanische-Keizer Ruysch, Coll. Nov. Pisc. Amboina, 1718, p. 37, pl. ix, fig. 1.

Douwing-cammus Renard, Poiss. Moluques, i, 1718, pl. xvi, fig. 93.

Empereur du Japon id., ibid., ii, 1719, pl. lvi, fig. 238; Valentyn, Amboina, iii, 1724, p. 462, fig. 370.

Ikan-djamban Valentyn, ibid., p. 362, fig. 51.

Poisson-couronné id., ibid., p. 479, fig. 418.

Chætodon imperator Bloch, Ausl. Fisch., iii, 1785, p. 51, pl. cxciv; Bonnaterre, Encycl. Méth., Ichth., 1788, p. 92, pl. xciii, fig. 384; Gmelin, Linnæus Syst. Nat., ed. 13, i, 1789, p. 1255; Schneider, Bloch Syst. Ichth., 1801, p. 217.

Holacanthus imperator Lacépède, Hist. Nat. Poiss., iv, 1802, pp. 527, 534, pl. xii, fig. 3; Cuvier & Valenciennes, Hist. Nat. Poiss., vii, 1831, p. 180; Bleeker, Nat. Tijds. Nederl Ind., iii, 1852, p. 758; id., Act. Soc. Sci. Indo-Neerl., i, Manado and Macassar, p. 48; id., ibid., viii, Celebes, etc., p. 35; Günther, Brit. Mus. Catal. Fish., ii, 1860, p. 52; Bleeker, Nederl. Tijds. Dierk., ii, 1865, p. 287; Klunzinger, Verh. zool.-bot. Ges. Wien, xx, 1870, p. 787; Bleeker, Nederl. Tijds. Dierk., iv, 1873, p. 140; Günther, Fisch. d. Südsee, i, pt. 2, 1874, p. 53, pl. xli, fig. A; Bleeker, Pollen & Van Dam, Hist. Madagascar, pt, 4, 1875, p. 96; Day, Fish. India, pt. i, 1875, p. 112, pl. xxviii, fig. 5; Seale, Occ. Pap. Bishop Mus., i, No. 3, 1901, p. 104; Jordan & Seale, Bull. U. S. Bur. Fish., xxv, 1905, p. 349.

Acanthochætodon imperator Bleeker, Verh. Akad. Amsterdam, xvii, 1877, Chæt., p. 150; id., Arch. Néerl. Sci. Nat., xii, 1877, p. 21; id., ibid., xiii, 1878, p. 41; id., Verh. Akad. Amsterdam, xviii, 1879, Maurice, p. 14.

Type locality:—Moluccas.

Depth of body 1·75 in its length; dorsal and ventral contours about equally elevated but not symmetrical, the former undulous and moderately acclivous to the nape, which is convex; beyond this it rises very gently to about the 6th dorsal spine, whence it descends in a long curve to the caudal peduncle; ventral contour irregularly convex between the chin and the vent, thence curving upwards more strongly to the peduncle, the least depth of which is 8·25 in the length of the body. Width of head 1·5 in its length, which is 1·1 in its depth and 3·5 in the body-length. Diameter of eye 2·15 in the length of the snout, which is half that of the head; interorbital region convex, its width 1·5 time the eye-diameter. Maxillary not extending to the vertical from the nostrils. Preorbital entire, its width one third more than the eye-diameter. Hinder limb of preopercle inclined well backwards, evenly serrated, the lower limb with or without one or more strong teeth, the spine short and very strong (sometimes double), 3·9 in the length of the head, and not reaching to below the middle of the opercle.

Scales small and ctenoid, the exposed area more or less completely spinulose; the basal margin not or but little lobulate. Lateral line complete but inconspicuous.

Dorsal fin originating above the pectoral axil, with xiv 21 rays, the soft portion 1·4 in the spinous; 1st spine rather short, about one third of the last, which is 1·55 in the longest ray and 6·2 in the body-length; procumbent spine if present concealed; soft dorsal with acutely pointed outline, the 6th ray longest, the hinder border undulous. Caudal fin rounded, the middle rays longer than the outer, 5·55 in the length of the body. Anal fin with iii 20 rays, originating below the 10th dorsal spine, the first spine 2·45 in the last, which is 1·35 in the middle and longest rays and 7·35 in the body-length; soft portion with evenly rounded outline, a little shorter than the soft dorsal. Pectoral with 19 rays, its length 3·8 in that of the body, the 4th ray longest, extending to below the 6th dorsal spine. Ventral a little longer than the pectoral, the spine 1·55 in the outer ray, which is not produced, is 3·7 in the body-length, and reaches to the vent.

Body purplish brown, with numerous narrow orange bands, which are continued on the soft dorsal and in a less degree on the anal fins, those on the upper half of the body with a general inclination upwards, on the lower half horizontal or with a trivial declination, but always curved well upwards posteriorly; scapular, pectoral and thoracic regions, and branchiostegal membranes uniform blackish. Head greenish yellow; a broad black frontal band, which decreases in width from above, passes downwards through the eye and along the preopercular border to the spine, which is dull blue. Dorsal fin with a broad fulvous marginal band throughout; caudal yellow; anal and pectorals purplish, the latter widely bordered with dull yellow; ventrals greenish yellow.

Etymology:—Latin, *imperator*, emperor; so named because the older Dutch writers on the Moluccas called it "*empereur du Japon.*"

Reg. No. of Queensland Museum specimen described:—I. 14/1711.

Measurements of the specimen:—See p. 116.

Range:—From the Red Sea and the East Coast of Africa, Madagascar and Mauritius, eastward through the seas of India and the Malay Archipelago to the Society and Panmotu Groups and northward to China and Guam.

Misled by the name given to this fine species by the earlier Dutch historians of the natural history of the Spice Islands, Bloch and those immediately following him gave the habitat as Japan, where, however, it has not as yet been found. This error was not corrected until 1831, when Valenciennes announced its true distribution as the "warm parts of the Indian Seas" from the Moluccas to Mauritius. To this Klunzinger added the Red Sea and Bleeker China and Madagascar, while Günther extended its range in an easterly direction to the far-off Society and Paumotu Groups and Seale in a northerly to the Mariannes. Coming nearer home Bleeker in 1878 recorded it from New Guinea, while our specimen, so far the only Australian representative, comes from Raine Island, an outlier of the Barrier Reef about the latitude of Somerset, N.Q.

Dimensions:—Grows to 380 millim.

Uses:—No modern writers whom I am able to consult speak of this as a food-fish, but Valenciennes publishes the following encomium on its excellence:—"It is reported to be the most highly esteemed of all the fishes which are commonly eaten in the Indies; they compare its flesh to that of the salmon."

Remarks:—Described from an example measuring 321 millim., collected by Dr. J. R. Tosh, and presented by him to the Queensland Museum.

HOLACANTHUS SEMICIRCULATUS Cuvier & Valenciennes.

Holacanthus semicirculatus Cuvier & Valenciennes, Hist. Nat. Poiss., vii, 1831, p. 191, pl. clxxxiii; Lesson and Garnot, Voy. Coquille, Zool., ii, 1831, p. 173, pl. xxx, fig. 3; Bleeker, Nat. Tijds. Nederl. Indo., viii, 1855, p. 414; id., ibid., xv, 1858, p. 200; id., ibid., xix, 1859, pp. 331, 333; id., ibid., xx, 1859, p. 241; Günther, Brit. Mus. Catal. Fish. ii, 1860, p. 53; Bleeker, Act. Soc. Sci. Indo-Neerl., viii, 1860, Sumatra, p. 26; id., ibid., Celebes, p. 35; id., Nederl. Tijds. Dierk., i, 1863, p. 270; id., ibid., ii, 1865, pp. 148, 190, 287; id., Versl. Akad. Amsterdam (2) ii, 1868, p. 297; Macleay, Proc. Linn. Soc. N. S. Wales, viii, 1883, p. 263; Jordan & Seale, Bull. U. S. Bur. Fisher., xxv, 1905, p. 349.

Chætodon microlepis Bleeker, Nat. Tijds. Nederl. Ind., iv, 1853, p. 257.

Holacanthus iburu Montrouzier, Essai. Faun. Isle Woodlark, 1857, p. 169.

Holacanthus nicobariensis part., Day, Fish. India, pt. 1, 1875, p. 112.

Holacanthus nicobariensis var. *semicirculatus* id., ibid., pl. xxviii, fig. 6.

Acanthochætodon semicirculatus Bleeker, Verh. Akad. Amsterdam, xvii, 1877, Chæt., p. 146; id., Arch. Néerl. Sci. Nat., xii, 1877, p. 21; id., Atlas Ichth., ix, 1877, p. 69, pl. ccclxx, fig. 5; id., Arch. Néerl. Sci. Nat., xiii, 1878, p. 45.

Holacanthus semicircularis de Vis, Proc. Linn. Soc. N. S. Wales, ix, 1884, p. 457.

Type locality:—Timor.

Depth of body 1·7 in its length; dorsal and ventral contours subsymmetrical, the former rather the more elevated, its anterior border linear and strongly acclivous to above the posterior border of the eye, thence convex to about the 5th dorsal spine, beyond which it curves gently downwards to the middle of the soft dorsal, whence the descent to the caudal peduncle is more abrupt; ventral contour evenly convex to the ventrals, thence sublinear and gently declivous to beyond the anal spines, thence curving upwards to the peduncle, the least depth of which is 7·2 in the length of the body. Length of head 1·15 in its depth and 3·2 in the body-length. Diameter of eye rather more than the length of the snout, which is 2·55 in the length of the head; interorbital region convex and moderately elevated, its width 1·2, its height 1·5 in the eye-diameter. Jaws equal; maxillary extending to below the posterior nostril. Preorbital without denticles, its width about half the eye-diameter. Both limbs of preopercle feebly serrated, the hinder inclined slightly backward; spine short and slightly curved, one fourth (to one third) of the length of the head and extending to below the middle (or posterior border) of the opercle.

Scales small; squamulæ wanting. Lateral line complete and conspicuous.

Dorsal fin originating above the hinder border of the opercle, with xiii 23 rays, the soft portion 1·3 in the spinous; spines graduated, the first moderately

developed, 2·6 in the last, which is 1·33 in the soft fin and 4·25 in the body-length; soft dorsal with obtusely angular outline, the anteromedian rays the longest, extending to above the middle of the caudal fin: procumbent spine, if present, small and concealed. Caudal fin feebly rounded, the middle rays as long as the outer and 4·8 in the length of the body. Anal with iii 21 rays, originating below the 10th dorsal spine: spines strong and graduated, the first 1·55 in the last, which is 1·15 in the longest and rather more than the last dorsal spine; soft anal similar to, but slightly shorter, lower, and more rounded than the soft dorsal. Pectoral with 19 rays, its length 3·4 in that of the body; 5th ray longest, extending to below the 8th dorsal spine. Ventral much longer than the pectoral, the spine half as long as the outer ray, which is produced, 2·55 in the body-length, and reaches to the 2nd anal spine.

Violaceous blue, with numerous alternate pearly white and pale blue narrow semicircular bands on the trunk and tail, the points of the crescents directed backwards and usually coalescent on the vertical fins; the bands on the head, peduncle, and caudal fin are vertical or nearly so, but a rather broader pearly band runs backward from the snout to the occiput and a slightly convergent pair from behind the eyes. Cheeks, bases of pectorals, and outer half of spinous dorsal yellowish; caudal with a broad terminal blue-gray band.

Etymology:—Latin, *semicirculatus*, semicircular.

Reg. No. of Queensland Museum specimen:—I. 11/197.

Measurements of the specimen described:—See p. 116.

Range:—Seas of India and Malaysia eastward to New Ireland and Fiji. Its occurrence at Woodlark Island was mentioned by Montrouzier as long ago as 1857, and some twenty years later Macleay obtained it from the Engineer Group, a short distance east from Moresby Island. Finally in the following year de Vis recorded it from the "Coast of Queensland" as *H. semicircularis*.

Dimensions:—A small species, apparently not exceeding 120 millim. in length.

CHÆTODONTOPLUS Bleeker.

Chætodontoplus Bleeker, Arch. Néerl. Sci. Nat., xi, pt. 2, 1876, p. 307 (*mesoleucus*).

Body ovate or elevated, strongly compressed. Scales minute, adherent, ctenoid, with the entire exposed surface densely spinulose. Lateral line complete or incomplete, rarely interrupted, the tube simple. Head short and deep, with subvertical profile, rather short rounded snout, deep preorbital, wholly scaly. Mouth terminal, with narrow transverse cleft, the jaws equal; maxillary mostly concealed when the mouth is closed, the exposed portion scaly. Teeth in the jaws in several series, small, slender, setiform; roof of mouth and tongue toothless. Nostrils superolateral and approximate, the anterior tubular, nearer to the eye than to the tip of the snout. Eye moderate and anteromedian, high but not encroaching upon the cranial profile. Preopercle with a strong pungent

spine at the angle, the hinder border usually serrated. One dorsal fin, with xi to xiii 18 to 21 rays; spines strong, pungent, graduated; soft portion shorter than the spinous, scaly, with rounded outline. Caudal rounded with 15 branched rays. Anal similar to soft dorsal, with iii 17 to 19 rays, the spines graduated. Pectoral small and obtusely pointed, with 17 to 20 rays. Ventrals inserted below the pectorals, close together, well developed, with i 5 rays, the spine long and strong, the outer ray longest, without accessory scale. Gill-membranes more or less broadly attached to the isthmus.

Etymology:—Greek, χαίτη, a bristle; ὀδων, a tooth; ὅπλα, arms or implements of warfare.

Range:—Chætodontiform fishes of small or moderate size from the Western Pacific Ocean. About seven species are recognized.

Key to the Queensland Species.

a^1. Depth of body 1·4 in its length; D. xi 21, the soft portion two thirds of the length of the spinous .. .. *dubouleyi*.

a^2. Depth of body about half its length; D. xiii 19, the soft portion nearly as long as the spinous .. .. *conspicillatus*.

CHÆTODONTOPLUS DUBOULEYI (Günther).[3]

Holacanthus duboulayi Günther, Ann. and Mag. Nat. Hist. (3) xx, 1867, p. 67; Macleay, Proc. Linn. Soc. N. S. Wales, ii, pt. 4, 1878, p. 352; Klunzinger, Sitz. Akad. Wien, lxxx, i, 1879, p. 361; Macleay, ibid., v, pt. 3, 1881, p. 395 (*after Günther*); McCulloch, Rec. Austr. Mus., ix. pt. 3, 1913, p. 360, pl. xiv; id., Rec: West. Austr. Mus., i, pt. 3, 1914, p. 222.

Chætodontoplus duboulayi Bleeker, Arch. Néerl. Sci. Nat., xii, 1877, p. 22.

Type locality:—North-West Coast of Australia.[4]

Depth of body 1·4 in its length; dorsal and ventral contours about equally elevated but not symmetrical, the former linear and strongly acclivous to above the anterior border of the eye, thence rising abruptly in a high convexity to about the 6th dorsal spine, beyond which it descends in a longer and more gentle curve to the caudal peduncle; ventral contour slightly concave between the lip and the throat, thence evenly rounded to the peduncle, the least depth of which is 7·2 in the length of the body. Width of head 1·55 in its length, which is 1·2 in its depth and 3·85 in the body-length. Diameter of eye 1·15 in the length of

[3] While fully recognising the value of the law which strictly enjoins that there shall be no tampering with an author's original orthography, there are, I think, cases where a certain amount of relaxation from the strict letter of the law is not merely advisable but incumbent upon us. One such case is that of a palpable printer's or pen error, of which the well-known substitution of *Orycnus* for *Orcynus* is an example: another such is the incorrect spelling of a proper name, whether through ignorance, carelessness, or accident. Two examples of this latter occur at once to me among Australian Fishes, namely *duboulayi* Günther and *philippi* Schneider, which should respectively be altered to *dubouleyi* and *phillipi*, so that those whose names are thus honored may be correctly designated.

[4] Mr. du Bouley forwarded collections to the British Museum from both Roebuck Bay and King Sound, and we may, therefore, assume that one or other of these inlets represents the type locality.

the snout, which is 2·6 in that of the head; interorbital region a little wider and two thirds higher than the eye-diameter. Jaws equal, maxillary extending to below the anterior nostril. Preorbital without spines, its width 1·15 in the eye-diameter. Hinder limb of preopercle vertical, serrated or rugose, the spine 2·4 in the length of the head and reaching to below the pectoral axil.

Scales minute and strongly etenoid, the entire exposed portion coarsely spinulose. Lateral line interrupted, the upper portion terminating close in front of the last dorsal rays, the lower commencing below the middle of the soft dorsal and extending straight to the root of the caudal, its tubes widely separated.

Dorsal fin originating above the vertical limb of the preopercle, with xi 21 rays, the soft portion only about one twelfth shorter than the spinous; spines graduated, the 1st well developed, 2·25 in the last, which is a little less than the 4th and longest ray and nearly one fourth of the body-length; outline of soft fin evenly convex. Caudal fin rounded, the middle rays as long as the outer and 4·35 in the length of the body. Anal with iii 19 rays, originating below the 1st dorsal ray, the 1st spine half as long as the 3rd, which is as long as the anterior rays and 3·7 in the body-length; soft anal similar to but a little longer and higher than the soft dorsal. Pectoral with 18 rays, its length 4·3 in that of the body; 4th ray longest, extending to below the 8th dorsal spine. Ventral a little longer than the pectoral, its spine 1·35 in the outer ray, which is slightly produced, 3·8 in the body-length, and reaches to the anal.

Gill-rakers 3 + 13, all short and triangular.

Purplish brown; a broad yellow band from before and below the three anterior spines across the opercle and base of the pectoral, to between the origin of the ventral and the vent; a second band from the sixth dorsal spine to the peduncle, increasing in width from the front, and about evenly divided between the body and fin, is sometimes continued across the peduncle, the extension being brown-spotted. Sides of head and breast lighter than the body, uniform or dark-spotted, lips and chin yellow. Dorsal and anal fins purple, with numerous pale blue, wavy, often interrupted horizontal lines; caudal, pectoral, and ventral fins yellow.

Variations:—McCulloch (*loc. cit.*) writes—"Klunzinger and Macleay have noted considerable variation in the arrangement of the lighter markings on the broad brown body-band. These may form either a network with the lines descending from the back to the belly, or be longitudinal and nearly straight. In others, again, as in that figured, they may be absent and represented only by a few irregular spots near the edges of the otherwise uniform brown surface. The lines on the fins are characteristic, but appear dark violet in some specimens and pale blue in others; the margins of the fins are similarly either light or dark."

Etymology:—Named for Mr. F. H. du Bouley, an ardent field naturalist and collector of West Australia, whose recent death we have to deplore.

Reg. No. in the Queensland Museum of the specimen described:—I. 14/1781.

Measurements of a typical Queensland example:—See p. 116.

Range:—Coasts of tropical and subtropical Australia. From the Queensland Coast I have seen four specimens obtained in Moreton Bay (2), Port Curtis (1), and Rockingham Bay (1).

Dimensions:—Attains a length of 180 millimeters.

Remarks:—First described by Günther from specimens forwarded to the British Museum by Mr. F. H. du Boulay from the North-West Coast of Australia, it next appeared at Port Darwin, Northern Territory, where Spalding collected four examples for the Hon. Sir Wm. Macleay. Two years later Klunzinger recorded it from the same locality. McCulloch mentions an example from Cape York, N.Q., in the Australian Museum. Our specimen is from Cardwell, N.Q., where it was collected by Mr. Kendall Broadbent, and measures 150 millim. Finally McCulloch records it from Port Hedland, W.A.

CHÆTODONTOPLUS CONSPICILLATUS (Waite).

Holacanthus conspicillatus Waite, Rec. Austr. Mus., iii, pt. 7, 15 June, 1900, p. 203, pl. xxxv; id., ibid., v, pt. 1, 1903, p. 37, and pt. 4, 1904, p. 215.

Holacanthus (Chætodontoplus) personifer McCulloch, Rec. West. Austr. Mus., i, pt. 3, p. 221, pl. xxxi.

Type localities:—Lord Howe Island (*conspicillatus*); West Australia (*personifer*).

Depth of body 1·8 to 2 in its length; dorsal and ventral contours about equally elevated but not symmetrical, the former linear and very strongly acclivous to above the posterior border of the eye, thence convex to the 3rd dorsal spine, beyond which it is linear and feebly declivous to the middle of the soft dorsal, whence it curves evenly downward to the caudal peduncle; ventral contour convex to below the eye, thence linear and somewhat declivous to the anal fin, the base of which describes a long gentle upward curve to the peduncle; least depth of peduncle 8·45 to 8·7 in the length of the body. Width of head 1·5 in its length, which is 1·2 in its depth and 4·1 to 4·35 in the body-length. Diameter of eye 1·1 to 1·2 in the length of the snout, which is 2·6 to 3·35 in that of the head; interorbital region as wide as or a little wider than and about as high as the eye-diameter. Lower jaw the longer; maxillary extending to below the anterior nostril. Preorbital without spines, its width 1·25 to 1·55 in the eye-diameter. Hinder limb of preopercle inclined somewhat backwards and evenly serrated, the spine 2 to 2·4 in the length of the head and not quite reaching to below the pectoral axil.

Scales minute and strongly ctenoid, the exposed portion densely spinulose, the basal margin without lobules. Lateral line incomplete, terminating in front of and rather remote from the end of the soft dorsal.

Dorsal fin originating above the opercle, with xiii 19 rays, the length of the soft portion 1·5 in that of the spinous; 1st spine short, about one fourth of the last, which is as long as the anterior rays and 5·2 in the body-length; soft dorsal with rounded outline. Caudal feebly rounded, the middle ray 1·15 in the outer and 4·9 in the length of the body. Anal with iii 19 rays, originating below the 11th dorsal spine, the 1st spine 1·5 to 2 in the length of the 3rd, which is a little less than the middle and longest rays and 5·3 to 5·5 in the body-length; soft anal longer, higher, and more convex than the soft dorsal. Pectoral with 18 rays, its length 4·85 to 5 in that of the body, the 4th and 5th rays longest, extending to below the 6th dorsal spine. Ventral longer than the pectoral, the spine 1·35 to 1·5 in the outer ray, which is somewhat produced, 4·25 to 4·6 in the body-length, and reaches to the vent.

Gill-rakers 3 + 13, short and triangular.

Deep imperial purple, except the abdominal region, which shades gradually to a smoky brown; a broad creamy collar passes across the nape from pectoral to pectoral, rapidly diminishing in width to an acute point beneath the latter; breast whitish, anteriorly tinged with brown. Snout and interorbital region yellowish brown; rest of head smoke brown, the sides with yellow spots, which may be small and numerous or large and scattered. Dorsal and anal fins like the body and with a narrow white border; caudal and ventrals yellow; pectorals purple, with the two upper rays and a broad terminal border creamy; ventrals creamy.

Etymology:—Latin: *conspicillatus,* spectacled.

Reg. No. of specimen in the Queensland Museum:—I. 14/1839.

Measurements of a typical Queensland specimen:—See p. 116.

Range:—Coasts of tropical and subtropical Australia; Lord Howe Island.

Dimensions:—Attains a length of 290 millimeters.

Remarks:—This handsome species was first described by Waite from two examples sent to the Australian Museum by Mrs. T. Nicholls from Lord Howe Island. The Queensland Museum possesses two specimens, both of which belonged to the old collection. The larger of these is in bad condition and without a distinguishable label; the second, however, from which my description is mainly taken, is well preserved and is labeled "Moreton Bay"; besides these the Amateur Fishermen's Association possesses two fine specimens from Moreton Bay, which they kindly lent me for use in this paper. The color pattern in these examples differs so widely from that of Waite's figure that I was at first inclined to consider the Queensland fish distinct, but as a most careful comparison of both descriptions showed no structural differences I have come to the conclusion that our Moreton Bay fish is merely a color variety of the Lord Howe species. On communicating with Mr. McCulloch on the subject, he informed me that he had

already described and figured a species resembling ours from West Australia under the name *H. personifer*, his paper being now in press. If we are correct in uniting the two species the range of *C. conspicillatus* will have to be so far extended.[5]

The nearest ally of this species is *C. dimidiatus* Bleeker[6] from Amboina, but in addition to the marked color differences, the contour of the dorsal surface, the outline of the spinous dorsal, the extra pectoral ray, etc., serve to separate the two species.

MEASUREMENTS OF THE QUEENSLAND POMACANTHINÆ.

—	*H. flavissimus*	*H. bicolor*	*H. sexstriatus*	*H. semicirculatus*	*H. imperator*	*C. duboulayi*	*C. conspicillatus*
Length from tip of longer jaw to that of caudal fin in millimeters	81	105	403	53	321	150	178
Expressed in hundredths.							
From tip of snout to base of middle caudal rays	100	100	100	100	100	100	100
Greatest depth of body	55·5	49·7	56·5	56·8	56·3	71·7	51·7
Least depth of caudal peduncle	14·1	14·8	14	13·9	12·1	13·9	11·8
Greatest width of head	19·3	16·6	19·3	..	19·1	16·4	16·3
Greatest depth of head	32	29·6	29·8	36·4	31·2	31·1	29·7
From tip of snout to end of bony opercle	27·3	26	25·6	31·7	28·7	25·8	24·3
From tip of snout to eye	9·5	9·7	12·2	12·5	14·3	9·9	8·7
Horizontal diameter of eye	11·1	8·5	5·6	13·6	6·6	8·6	7·8
Width between middle of eyes	9·5	8·3	9·3	11·4	9·9	9·2	7·6
Height above middle of eyes	..	7·1	6·8	9·1	..	14·3	11·6
Between eye and angle of mouth	5·8	6·9	7·8	6·7	8·8	7·4	5·4
Length of preopercular spine	9·5	14·8	12·5	7·9	7·4	10·8	10·1
Basal length of spinous dorsal	47·1	51·9	45·2	40·9	44·1	43·9	46·6
Basal length of soft dorsal	26·6	20	30·6	31·8	31·3	41	31·6
Length of first dorsal spine	8·4	9·6	4·6	9·1	5·1	10·9	4·9
Length of last dorsal spine	21·9	16·3	16·1	23·6	16·2	24·6	19·2
Length of longest dorsal ray	26·3	29·6	29·5	31·4	25	26·2	19·7
Length of middle caudal rays	28·5	24·3	19·9	20·9	18	23	20·3
Length of outer caudal rays	22·2	21·3	17·3	20	17	23	23
Length of first anal spine	14·3	12·1	6·8	15·9	5·5	13·5	9·3
Length of last anal spine	20·6	16	14·9	25	13·6	26·9	18·9
Length of longest anal ray	23·6	28·8	28·3	28·6	18·4	26·9	21·3
Length of soft anal	25·4	28·2	30·9	30·7	30·1	42·2	33·1
Length of pectoral fin	28·5	25·1	25·3	29·5	26·5	23·3	20·6
Length of ventral spine	19·2	18·5	18·4	19	17·3	19·3	15·8
Length of ventral fin	38·5	30	42	38	26·8	26·2	23·5

[5] Mr. McCulloch's paper is just to hand and though in both measurements, shape and color of caudal, and size of paired fins, it differs greatly from our specimens, I believe that the differences are due to age, my specimens being much smaller than his.

[6] Atlas Ichth., ix, 1877, p. 57, pl. ccclxix, fig. 4.

ON SOME NEW OR LITTLE-KNOWN AUSTRALIAN FISHES.

By J. Douglas Ogilby.

(Plates XXIX–XXX.)

In the following pages there will be found descriptions of a new genus and five new species of Queensland Fishes, as well as redescriptions of three others, which for some reason are interesting. They are as follow:—

1. Physodon taylori sp. nov. *Galeidæ.*
2. Melanotænia maccullochi sp. nov. *Atherinidæ.*
3. Psenes hillii sp. nov. *Stromateidæ.*
4. Plectorhynchus multivittatus (Macleay). *Pomadasidæ.*
5. Reganichthys magnificus gen. et sp. nov. *? Pempheridæ.*
6. Asterropteryx semipunctatus Rüppell. *Elcotridæ.*
7. Blennius intermedius sp. nov. *Blenniidæ.*
8. Spheroides multistriatus (Richardson). *Tetraodontidæ.*

The three beautiful illustrations in this paper were kindly drawn by Mr. Allan R. McCulloch, of the Australian Museum, Sydney, to whom we here tender our grateful thanks.[1]

Family GALEIDÆ.

PHYSODON TAYLORI sp. nov.

Type locality:—Townsville, N.Q.

Body moderately slender and compressed, the vent slightly premedian, its contour between the eye and the first dorsal convex. Head about one eighth wider than deep, its length to the first gill-slit 6·1, to the last 4·8 in the total length. Snout rather short and obtusely pointed, depressed, its preoral length 1·33 time the ramal length of the upper jaw, a little more than the width of the mouth, and one tenth less than the space between the eye and the first gill-slit. Oro-narial interspace half the distance of the nostril from the tip of the snout, which is one sixth more than the internarial width, 1·2 in the space between the nostril and the angle of the mouth, and 1·55 in that between the outer angles of the nostrils. Width of nostril a little less than the eye-diameter; two small triangular valvules, the outer the larger, near the inner angle of the nostril anteriorly. Eye vertically elliptical, three tenths nearer to the mouth than to the nostril, and midway between the tip of the snout and the first gill-slit, its

[1] I have great pleasure in supplementing Mr. Ogilby's remarks. From time to time the Queensland Museum has been indebted in more than one respect to Mr. McCulloch, and I wish very heartily to record my appreciation of his valuable assistance.—R. Hamlyn-Harris.

horizontal diameter 4·15 in the preoral length and 3·85 in the width of the mouth; interocular width one tenth more than the preoral length. Angle of upper jaw touching a line drawn between the anterior borders of the eyes. Labial folds moderately developed, that of the lower jaw twice as long as the upper fold, which is about one fourth of the ramal length; a groove behind the angle of the mouth.

Teeth rather stout and moderately oblique, those of the upper jaw with the tip straight, of the lower with the tip bent somewhat inwards, each with a deep notch behind; lower jaw without, upper with a median unpaired tooth.

Gill-slits narrow, the width of the third 1·8 in the distance between the upper angles of the first and fifth and seven tenths more than the eye-diameter; last two gill-slits above the pectoral.

First dorsal originating a little behind the inner angle of the pectoral, its inner lobe not quite reaching the vertical from the origin of the ventral; second dorsal very small, its basal length 4·15 in that of the first and 3·15 in its distance from the precaudal pit; interdorsal space one ninth more than the upper caudal lobe, which is one fourth of the total length; lower lobe well developed, broad and obtuse, its length 2·35 in that of the upper. Anal terminating below the middle and 1·9 time the base of the second dorsal, inserted about four ninths nearer to the caudal than to the ventrals. Pectoral triangular, with both outer and inner angles obtuse, its width 1·25 in its length and 1·1 in the base of the first dorsal, its outer angle extending to below the anterior third of that fin. Ventral fins inserted four ninths nearer to the first than to the second dorsal.

Dark blue-gray above, lighter below, none of the fins with darker tips or borders.

Etymology:—Named after Mr. Frank Henry Taylor, Entomologist to the Institute of Tropical Medicine, Townsville, N.Q., by whom the specimen was collected.

Reg. No. in Queensland Museum—I. 12/738.

Range:—Coast of North Queensland.

How acquired:—Presented to the Queensland Museum by its collector. The specimen, which is in beautiful condition, is a half grown female.

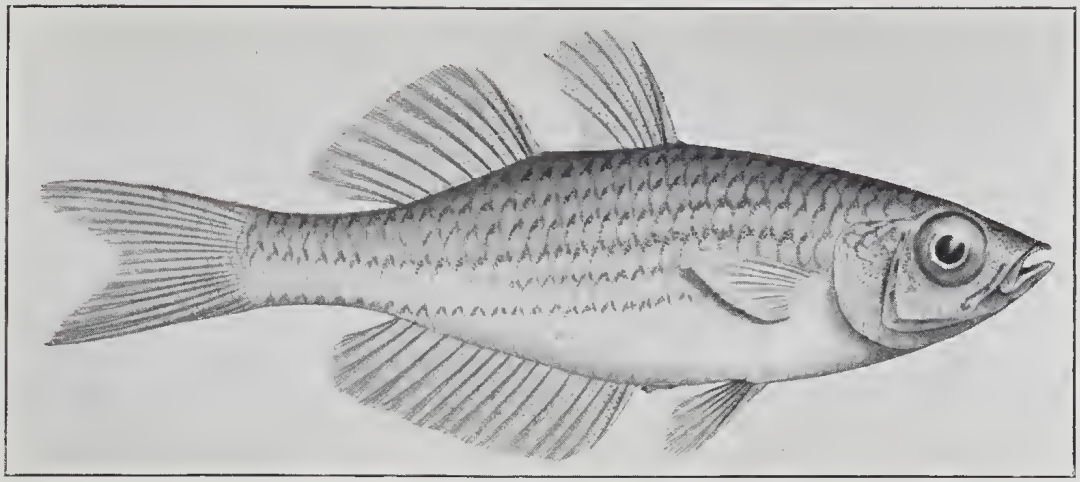
Family MELANOTÆNIIDÆ.

MELANOTÆNIA MACCULLOCHI sp. nov.

(Plate XXIX, Fig. 1.)

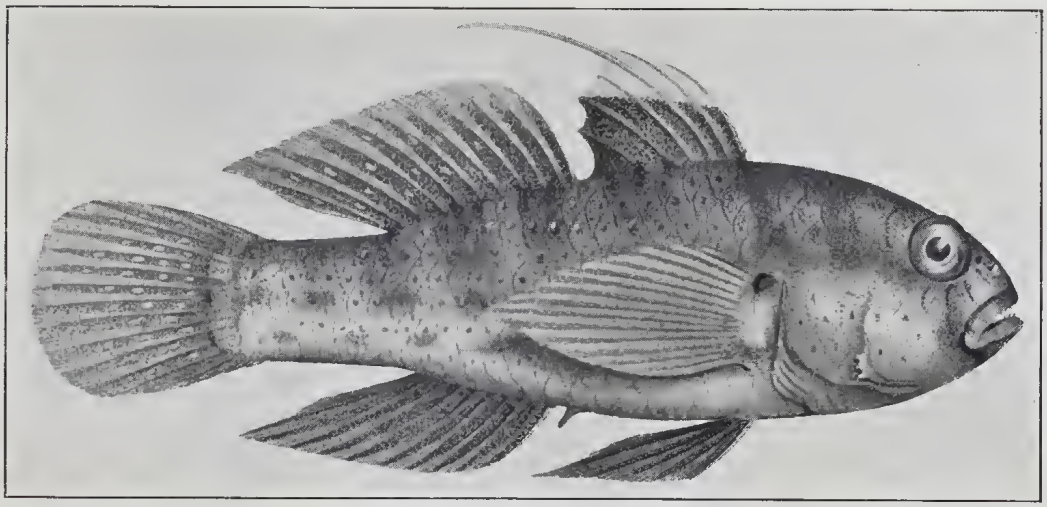
Type locality:—Barron River, N.Q.

Body subovate and strongly compressed, the ventral contour rather more arched than the dorsal, its width 2·12 in its depth, which is 3·45 in its length and one tenth more than the length of the head; caudal peduncle rather slender, its least depth 1·45 in its length and 8·54 in the length of the body. Head small,



1. MELANOTÆNIA MACCULLOCHI Ogilby. 2½ Nat. Size.

A. R. McCulloch, del.



ASTERROPTERYX SEMIPUNCTATUS Rüppell. 3 Nat. Size.

A. R. McCulloch, del.

Face page 118.

NATIONAL MUSEUM MELBOURNE

with the upper profile linear and slightly acclivous, its width 1·8, its depth 1·31 in its length, which is 3·65 in that of the body. Snout depressed and obtusely rounded anteriorly, its length 1·17 in the eye-diameter, which is 2·85 in the length of the head and 1·07 in the gently rounded interorbital width. Cleft of mouth oblique, the lower jaw prominent; maxillary somewhat dilated distally, not extending to below the eye, entirely concealed when the mouth is closed.

Scales in 32 series between the opercle and the root of the caudal, in 9 between the origin of the first dorsal and the vent. Cheeks, opercles, and occiput scaly, the rest of the head naked.

Dorsal fins with i 5, i 9 rays, the first originating above the 8th, the second above the 16th body-scale; spine of first dorsal 1·27 in the middle ray, which is 1·5 in the length of the head, and extends, when depressed, beyond the origin of the second dorsal: spine of second dorsal as long as that of the first, the rays increasing to the 3rd, which is a little lower than the first dorsal. Caudal forked, its length one fourth of that of the body. Anal with i 15 rays, originating below the middle of the first dorsal, its spine 1·43 in that of the dorsal and 1·5 in the length of the longest ray; last ray of anal not nearly reaching to the caudal. Pectoral pointed, with 14 rays, the 4th longest, 1·66 in the length of the head. Ventral inserted below the middle of the appressed pectoral, its length 1·57 in that of the head, the outer ray longest, reaching to beyond the vent.

Light brown, all the upper trunk-scales with darker borders; sides with six series of small dark spots, forming chevron bands. Opercular region with two dusky blotches. Fins colorless.

Etymology:—I have much pleasure in naming this pretty little species after my friend and fellow-worker Mr. Allan Riverston McCulloch, whose excellent papers on our southern and deep-water fishes have become the leading feature in Australian ichthyology.

Reg. No. in the Queensland Museum—I. 12/731; its length 52 millim.

Range:—Streams of North Queensland. Two specimens from the Barron River, near Cairns, N.Q.

How acquired:—Collected and donated by Mr. A. Anderson.

Family STROMATEIDÆ.

PSENES HILLII sp. nov.

Type locality:—Cowan Cowan, Moreton Bay.

Body elliptical, the dorsal and ventral contours rounded and symmetrical, its width 2·5 in its depth, which is 2·85 to 3·05 in its length and a little more than the length of the head; caudal peduncle about one fourth longer than deep, its least depth 9·8 in the body-length. Head rather large, the upper profile feebly

rounded and but little aeclivous from the forehead to the dorsal fin, its width 2·1, its depth 1·15, in its length, which is 3 to 3·25 in that of the body. Snout short and obtuse, with strongly convex, anteriorly subvertical profile, its length 1·4 in the eye-diameter, which is 2·65 to 2·9 in the length of the head; interorbital region mesially flattened, its width 3·2 in the head. Mouth small and oblique, the jaws equal; maxillary extending to below the anterior border of the eye.

Scales 5/56/19. Lateral line forming a long shallow curve to about the first third of the peduncle.

Dorsal fin originating above the opercular flap, with xi, i 20 rays, the spinous portion 1·4 in the soft; spines weak and flexible, the 5th the longest, 2 to 2·25 in the length of the head, the last spine short and isolated; soft dorsal low, about one sixth lower than the spinous. Caudal forked, the middle rays 1·4 in the upper lobe, which is 3·45 in the body-length. Anal originating below the 1st dorsal ray, with iii 19 rays, spines short, the 3rd the longest, 2·3 in the anterior rays, which are 2·4 in the length of the head. Pectoral obtusely pointed, with 21 rays, its length 3·15 to 3·25 in that of the body; 7th ray longest, reaching to the vertical from the 3rd anal ray. Ventral inserted below the last quarter of the pectoral-base, the spine short and feeble, 2·4 in the 2nd and longest ray, which is 4·3 in the length of the body and reaches to the 2nd anal spine.

Gill-rakers short and slender, 7+16 on the anterior arch, the longest 1·3 in the gill-fringes and 8·6 in the length of the head.

Pale yellowish brown, every scale but especially those above the lateral line so closely crowded with dark brown dots as to give the fish a dark appearance; lower surface of head and abdomen faintly tinged with orange; cheeks and postorbital region dark brown. Dorsal fins blackish; caudal brownish; anal, pectorals, and ventrals yellow, the former narrowly tipped with white, the latter broadly with lavender.

Etymology:—Named after Mr. Charles William Hill, Lightkeeper at Cowan Cowan, to whom we are indebted for the specimen.

Described from two Moreton Bay examples, measuring respectively 112 and 87 millim. They were obtained at Cowan Cowan, M.B., and Southport, and the larger example, which has been chosen as the type, was presented by Mr. C. W. Hill, to whom I have great pleasure in dedicating it. Its register number in the Queensland Museum is I. 14/2165.

Family POMADASIDÆ.

PLECTORHYNCHUS MULTIVITTATUS (Macleay).

Diagramma multivittatum Macleay, Proc. Linn. Soc. N. S. Wales, ii, pt. 4, June 1878, p. 349, pl. vii, fig. 2.

Type locality:—Port Darwin, Northern Territory.

Body deeply subovate and compressed, the dorsal contour much more arched than the ventral, its width 2·55 in its depth, which is 2·45 in the length

of the body and one fourth more than that of the head; least depth of caudal pedunele a little less than its length and 3·5 in the depth of the body. Upper profile of head and nape evenly rounded, with a scarcely perceptible emargination above the posterior half of the eye. The occiput and nape moderately keeled; head a little longer than deep, 3·05 in the length of the body. Snout blunt, with gently rounded profile, its length 2·5 in that of the head; nostrils small and approximate, the posterior horizontally the anterior vertically oval, the latter valvular, its distance from the eye 2·5 in that from the tip of the snout. Eye moderate, its diameter 3·4 in the length of the head and 1·33 in that of the snout; interorbital region convex, its width a little less than the eye-diameter and 3·6 in the length of the head. Upper jaw slightly the longer; maxillary extending to below the anterior border of the eye, its length 3 in that of the head. Depth of preorbital 1·45 in the eye-diameter, which is 1·3 in the depth of the cheek. Angle of preopercle broadly rounded and feebly dentieulate, the hinder limb more strongly, evenly, and closely armed, the lower entire; opercle with a short, stout, concealed spine; post-temporal serrated.

Scale formula $14/\frac{9}{7}\frac{2}{0}/26$; L.l. tubes 55. Many of the scales on the tail, especially those near the lateral line, provided with several squamulæ. Head, except the snout in front of the nostrils, the lips, and the mandibles sealy, the opercular scales largest; three pair of open pores on the lower jaw inferiorly. Spinous dorsal with a low scaly sheath; soft dorsal and anal with a broad basal sealy band and the rays scaly nearly to the tip.

Dorsal fin xii 20, originating above the latter half of the opercle; spinous dorsal with rounded outline; spines moderate, the first 1·6 in the second and 2·3 in the fourth and longest, which is 2·25 in the length of the head and but little longer than the adjacent spines; thence it decreases gradually to the last, which is a little shorter than the penultimate and 1·25 in the fourth: soft dorsal a little longer than the spinous, with gently rounded outline, the middle rays longest, scarcely longer than the fourth spine. Caudal emarginate, the middle rays 1·33 in the upper lobe, which is 3·85 in the body-length. Anal iii 7, originating below the eighth dorsal ray, the second spine stronger and slightly longer than the third, 2·45 in the length of the head and 1·4 in the second and longest ray, which considerably exceeds the height of the soft dorsal. Pectoral short and pointed, extending to below the penultimate dorsal spine, its length 1·5 in that of the head. Ventral pointed, longer than the pectoral, 1·33 in the length of the head; outer ray longest, reaching the vent.

Gill-rakers short and stout, 12+20, the longest 4 in the eye-diameter, and about one third of the longest fringes. Vent five sevenths of an eye-diameter in advance of the anal fin.

Silver-gray, darkest on the back and head, where there is a distinct admixture of blue; body with 16 irregular brown bands, the first pair forming the borders of an elongate ellipse between the occiput and the anterior dorsal spines; the next 9 bands cross the head at different angles, the 5th, 6th, and 7th passing through the eye; these bands unite on the occiput, forehead, and snout, are as wide or a little wider than the interspaces, and being roughly parallel to the first band and to one another, form ever-widening ellipses, the continuity of which is only broken by the increasingly greater obliquity of the bands from the front; beyond the 7th band, which meets the dorsal ridge below the 4th dorsal, the obliquity decreases; the last six bands originate on the body, the anterior pair meeting the soft dorsal, the middle pair uniting on the peduncular ridge, the last pair, which are horizontal, forked posteriorly, the inner branches coalescing on the base of the caudal, the outer pair curved and converging behind; the bands which impinge upon the soft dorsal extend over its scaly sheath, but with these two exceptions the fins are yellowish gray, as also are the abdominal, thoracic, and mandibular regions.

Etymology:—Latin: *multus*, many; *vittatus*, banded.

Reg. No. in the Queensland Museum—I. 13/1506.

Range:—Of this species three examples only are known to me—namely, Macleay's two, from which his description was drawn up, and which were collected for him by Spalding at Port Darwin, Northern Territory, and the present specimen from Darnley Island. It is true that Kent includes it in his "Classified List of Queensland Food Fishes" (Great Barrier Reef, p. 369), but this list is in every way so unsatisfactory that no reliance can be placed upon it.

How acquired:—Presented to the Queensland Museum by Dr. J. R. Tosh.

Remarks:—The differentiation of the banded *Plectorhynchi* is admittedly difficult, and is not rendered easier to the student, who has but a limited series on which to work, by the knowledge, as demonstrated by Bleeker,[1] that the number of the body-bands and the ornamentation of the fins varies with the age of the individual. Macleay considered his fish to be affine to *Plectorhynchus hæmatochir*[2] and *P. polytænia*.[3] The latter may at once be dismissed, but its relationship is very close to *P. goldmani*,[4] which was founded on an immature fish, the adult of which was subsequently named *P. hæmatochir*.[5] Our species,

[1] Atlas Ichth., viii, 1876, p. 14 et alibi.

[2] Nat. Tidjs. Nederl. Ind., vi, 1854, p. 175: Ternate.

[3] Ibid., iii, 1852, p. 755: Macassar.

[4] Ibid., iv, 1853, p. 602: Ternate (*Goldmanni* in errore; see ibid., vi, p. 175).

[5] Jordan & Seale (Fishes of Samoa, No. 672) revert to this name, but as I cannot find any mention of it prior to 1854 I adhere to the name adopted by Bleeker in the Atlas Ichthyologique.

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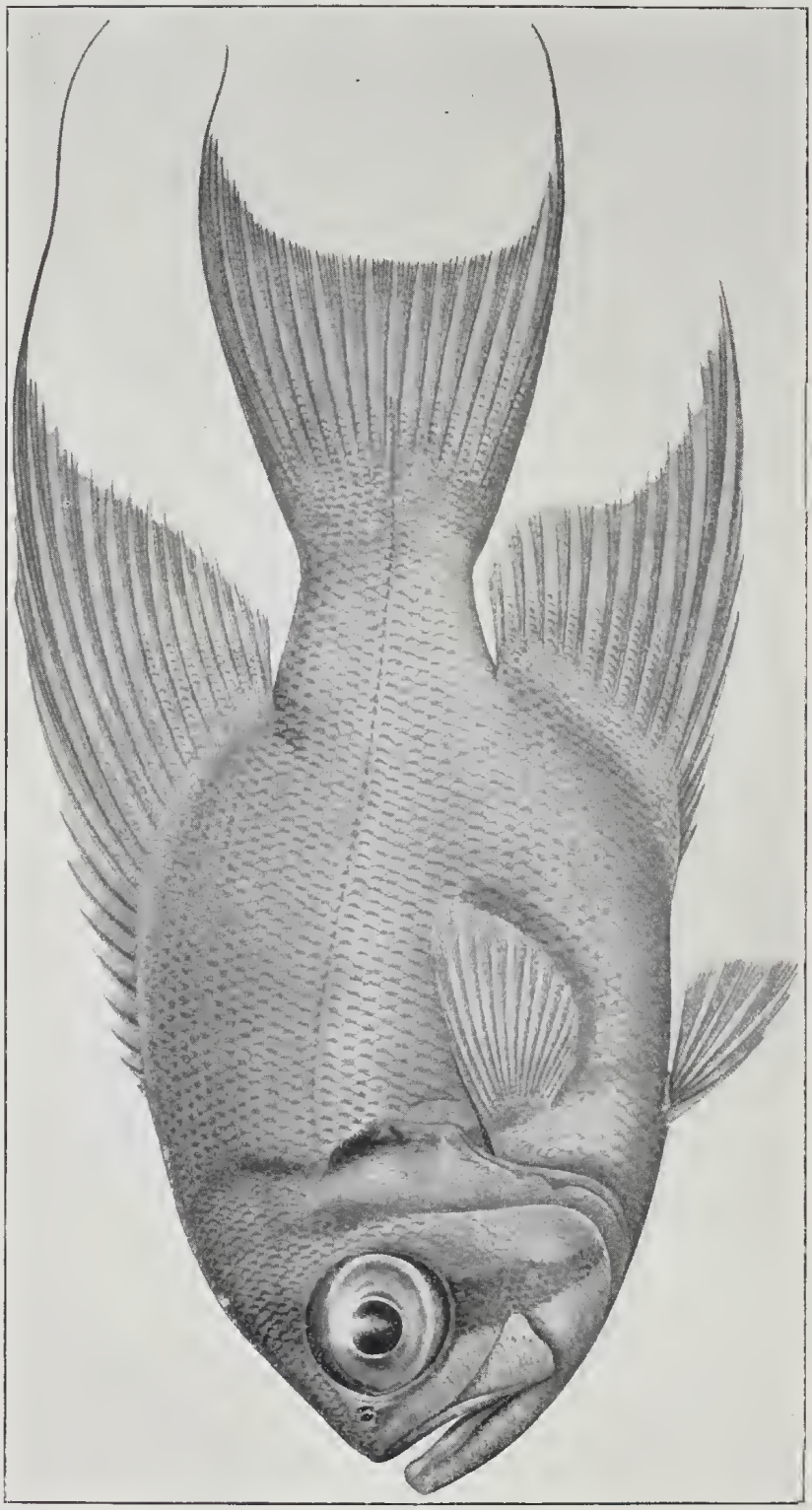

REGANICHTHYS MAGNIFICUS Ogilby. ⅔ Nat. Size.

A. R. McCulloch, del.

Face page 123.

however, differs from Bleeker's in its deeper body, longer head, more robust peduncle, and larger scales. The color-pattern of ereseentic bands, all of whieh, except the last two, terminate on the dorsal ridge, is very distinet, nor is there any trace of spots on the fins.

Family PEMPHERIDÆ.

REGANICHTHYS gen. nov.

Body deeply ovate, eompressed. Scales moderate, adherent, ctenoid, smooth. Lateral line continued well on the caudal fin, the tubes simple, oeeupying the basal portion of the exposed scale only. Head almost wholly sealy, with short blunt snout and narrow preorbital. Mouth terminal, protraetile, with wide oblique eleft, the lower jaw prominent. Jaws, vomer, and palatines with narrow bands of small teeth. Nostrils eontiguous, close in front of the upper half of the eye. Eyes very large, anteromedian, high. Preorbital entire: preoperele nearly so; opercle with a blunt point. One dorsal fin, with viii 14 rays, the spines graduated, the rayed portion longer than that of the anal; some of the anterior rays greatly produced. Caudal very large, emarginate, with 15 branched rays, the outer produced. Anal with iii 12 rays, similar to the dorsal. Pectorals obtusely pointed, with 16 rays. Ventrals well developed, inserted below the base of the pectorals, elose together, with a strong spine and 5 braneh rays. Gill-openings wide; gill-membranes separate, free from the isthmus; pseudobranchiæ large; gill-rakers in moderate number, long and slender.

Etymology:—I have mueh pleasure in naming this fine genus after Mr. C. Tate Regan, B.A., of the British Museum of Natural History, whose taxonomic work has been invaluable to students of this class.

Remarks:—*Reganichthys* bears a marked external resemblanee both to a typieal *Pempheris* and to the monodactyloid genus *Schuettia* (=*Bramichthys*), but is at once distinguishable from both by the short anal, while from the latter it is further separable by the etenoid scales, few-rayed dorsal, and normally developed ventral. On the whole, therefore, I eonsider that its affinities are more with the *Pempheridæ* than with the *Monodactylidæ* and I have, therefore, placed it provisionally in the former family.

REGANICHTHYS MAGNIFICUS sp. nov.

(Plate XXX.)

THREADFIN BULLSEYE.

Type locality:—Thursday Island, Torres Strait.

Dorsal and ventral eontours evenly eonvex, the latter somewhat the deeper; surfaee of back in front of the dorsal fin transversely rounded; width of body 2·44 in its depth, whieh is 1·7 in its length and three fifths more than

the length of the head; caudal peduncle deeper than long, its least depth 5·6 in the length of the body. Anterior profile of head from the lip to above the middle of the eye linear and strongly acclivous, the upper profile gently rounded; width of head 1·65 in its length, which is 1·2 in its depth and 2·7 in the body-length. Snout 1·6 in the very large eye, which is 2·3 in the length of the head; interorbital region strongly convex, its width 3·8 in the length of the head. Maxillary extending to below the middle of the eye, its length 1·6 in that of the head, its distal extremity obtusely angular and greatly dilated, its width one third of its length and 2·1 in the eye-diameter. Angle of preoperele broadly rounded, armed with a few very feeble serrulæ.

Scale formula 16/48/25. Head-scales much smaller than those of the body, decreasing in size anteriorly; only the extreme tip of the snout, the lips, and the chin naked.

Dorsal fin with viii 14 rays, originating above the pectoral-base, the soft portion three fifths longer than the spinous; spines strong and pungent, the first very short, evenly graduated to the last, which is half the length of the head; 1st ray terminating in a simple filament, rather more than twice as long as the last spine; 2nd ray about one third longer than the 1st; 3rd ray very long, reaching far beyond the tip of the caudal and rather more than the body-length; 4th ray about half as long as the 3rd, those behind growing gradually shorter, the last being about 2·33 in the 1st. Middle caudal rays 1·8 in the outer divided rays and one third of the total length. Anal fin with iii 12 rays originating below the 4th dorsal ray and extending backwards well behind that fin, its length slightly more than that of the soft dorsal; spines strong and graduated, the last about as long as the 7th dorsal spine and 2·5 in the length of the head; rays graduated as in the soft dorsal, but much shorter, the 3rd 1·8 in the body-length. Pectoral with 16 rays, the upper two simple, its length 1·33 in that of the head; 4th and 5th rays longest, extending to below the anterior dorsal rays. Ventral spine rather weak, two thirds of the second and longest ray, which is 1·6 in the head and extends to the vent.

Gill-rakers 10+18, the longest 1·5 time the length of the gill-fringes and 4·9 in that of the head.

Uniform reddish brown, the middle of the scales lighter; many of the scales on the upper surface of the head lavender; cheeks and opercles lighter brown, with a yellowish tinge; a broad dark brown band from below the eye to the edge of the lower preopercular limb; a second narrower band from the parietal region to midway along the hinder limb of the preoperele; a third from the pectoral-base to the nape, along the side of which it is curved abruptly forward to meet its fellow narrowly on the nuchal arch. Fins lighter than the body, except the dorsal, caudal, and anal filaments, which are blackish.

Etymology:—Latin, *magnificus,* magnificent.

Reg. No. of type in the Queensland Museum—I. 14/1803.

Measurements of type in millimeters:—

From tip of snout to that of outer caudal rays	265
From tip of snout to that of middle caudal rays	216
From tip of snout to base of middle caudal rays	162
Width of body	39
Depth of body	95
Length of head	60
Depth of caudal peduncle	29
Width of head	36·5
Depth of head	73
Length of snout	16.3
Diameter of eye	26·2
Width of interorbit	15·8
Length of maxillary	37.5
Width of maxillary	12·5
Length of spinous dorsal	29
Length of soft dorsal	47
Last dorsal spine	30
Middle caudal rays	54
Outer caudal rays	97
Length of anal	49
Last anal spine	24
Length of pectoral	45
Length of ventral	37

Range:—Coast of North Queensland (Thursday Island).

How acquired:—Collected and donated by Captain Donald McDonald.

Family ELEOTRIDÆ.

ASTERROPTERYX SEMIPUNCTATUS Rüppell.

Asterropteryx semipunctatus Rüppell, Atlas Fisch. Roth. Meer., 1828, p. 138., pl. xxxiv, fig. 4; Günther, Brit. Mus. Catal. Fish., iii, 1861, p. 132; Kner, Sitz. Akad. Wien, lviii, 1869, p. 329; Klunzinger, Verh. zool.-bot. Ges. Wien, 1871, p. 484; Günther, Fisch. d. Sudsee, pt. 5, 1877, p. 187, pl. cxi, fig. D.

Eleotris cyanostigma Bleeker, Nat. Tijds. Nederl. Ind., viii, 1855, p. 452; Playfair, Proc. Zool. Soc., 1867, p. 862; Bleeker, in Pollen & van Dam, Faun. Madagascar, pt. 4, 1875, Poiss., p. 103.

Brachyeleotris cyanostigma Bleeker, Versl. Akad. Amsterdam (2) xi, 1877, p. 84.

(Plate XXIX, Fig. 2.)

Body short and stout, the dorsal contour evenly rounded and rather more arched than the ventral, its width 1·67 in its depth, which is about one

third of its length and one tenth more than the length of the head; caudal peduncle stout, a little longer than deep, its least depth 6·4 in the length of the body. Head with upper profile rounded and rather strongly acclivous anteriorly, the cheeks somewhat swollen, its width 1·31 in its depth, which is about equal to its length and 3·33 in the length of the body. Snout obtusely rounded, about one fourth of the length of the head and as long as the eye-diameter; interorbital region narrow and flat, its width 1·64 in the eye-diameter. Mouth small, with strongly oblique cleft, not extending to the vertical from the eye; anterior nostril tubular. Preopercle with a few short stout spines at its rounded angle.

Scales 2/24/6, large and etenoid, of equal size throughout; cheeks, opercles, occiput, and lower surface of head behind the chin covered with large scales.

Dorsal fin with vi, i 10 rays; 2nd and 4th dorsal spines with a moderately developed, 3rd with a long filamentous appendage, the latter when depressed reaching to the end of the soft dorsal; soft dorsal higher than the spinous, the rays increasing in length from the front, the middle ones 1·55 in the length of the head, but not so high as the body below them, the last two produced in short filaments, extending well along the caudal fin. Caudal rounded, with none of the rays produced; the middle rays longest, 3·85 in the body-length. Anal with 1·9 rays, originating below the 2nd dorsal ray, similar to but shorter than the soft dorsal, and without filamentous tips to the last rays. Pectoral with 17 rays, the middle longest, one third of the body-length, extending when appressed to beyond the middle of the anal fin. Ventrals elongate and close together, the 4th ray longest, 1·1 in the length of the head and reaching to the 3rd anal ray.

Anal papilla long and slender.

Olive brown, clouded with darker brown, the markings forming irregular vertical bars, and with several series of small well separated pale blue spots. A broad dark bar from the antero-inferior angle of the orbit to behind the cleft of the mouth; a similar but more obscure bar along the hinder border of the preopercle, and a third rather better marked across the chin. Spinous dorsals like the back, but the tips of the first four spines and the filaments white; soft dorsal brown, shading to lilac marginally, except the two last rays, the tips of which are blackish; basally and mesially it has a series of translucent spots; caudal lilac, with many similar spots and a basal dusky band; anal, ventral, and pectoral fins lilac, the former with dusky tips to the rays.

Etymology:—Latin: *semi*, half; *punctatus*, spotted.

Reg. No. in the Queensland Museum—I. 14/1737.

Range:—From the Red Sea eastward through those of India and Malaysia to Northern Queensland and the South Sea Islands

Family BLENNIIDÆ.

BLENNIUS INTERMEDIUS sp. nov.

Type locality:—Darnley Island.

Body moderately robust, its width 1·5 in its depth, which is 4·15 in its length and 1·3 in the length of the head; vent one sixth nearer to root of caudal than to extremity of snout; depth of caudal peduncle 3·25 in length of head. Head with its anterior profile linear and strongly declivous, its width 1·67, its depth 1·33 in its length, which is 3·15 in that of the body. Snout rounded, its length one third of that of the head; eye not encroaching on the dorsal profile, its diameter 1·14 in the length of the snout and 3·45 in that of the head; supraorbital ridges prominent; interorbital region narrow and concave, its width 3·2 in the eye-diameter. Nasal cirrus small and bifid; orbital cirrus short and ramose, about half an eye-diameter long; a low nuchal crest. Upper jaw slightly projecting; maxillary extending to below the anterior border of the pupil.

Both jaws with strong curved canines.

Lateral line distinct to about the tip of the pectoral; a few scattered pores at irregular intervals along the middle of the tail.

Dorsal fin with xii 16 rays, originating above the opercle, its border moderately cleft, the membrane of the last spine reaching about half way up the first ray; spinous portion of the fin somewhat lower than the soft, which is highest in its third quarter, about half the length of the head; membrane of last ray not connected with the caudal. Caudal fin rounded, with 12 principal rays, 7 of which are divided, its length 4·75 in that of the body. Anal with ii 18 to 20 rays, originating below the dorsal notch, the middle rays the longest, 2·85 in the length of the head; last ray with a moderate membrane. Pectoral obtusely cuneate, with 15 rays, the lower middle rays the longest, 1·33 in the length of the head; lower rays somewhat thickened. Ventral with 2 soft rays, the inner the longer, rather more than the head behind the eye.

Pale greenish yellow, with 12 black spots arranged in pairs below and upon the base of the dorsal fin; sides with numerous black spots irregularly distributed, but giving a general impression, in conjunction with the dorsal series, of vertical rows of paired spots; a few smaller spots on the sides of the abdomen and an obscure series of five along the base of the anal. Head with a few spots on the opercles and branchiostegals, and a pair of angular bars across the lower surface; orbital cirrus black, tipped with white. A black spot between the two anterior dorsal spines and an obscure median series on the spinous portion; other fins immaculate.

Etymology:—intermedius, "that is between"; Darnley Island, whence it comes, being roughly intermediate between Port Arthur, Tasmania and Misaki, Japan, the type localities respectively of *B. tasmanius* and *B. yatebei.*

Range:—So far only known from Darnley Island, where two small specimens were collected and forwarded to the Queensland Museum by Dr. J. R. Tosh.

Remarks:—Very closely allied to *Blennius yatebei* Jordan & Snyder. Both these species can be at once distinguished from *B. tasmanius* by the forward position of the vent, which in the latter species is nearer to the root of the caudal than to the tip of the mandible. The length of the type is 46 millim., its register number in the Queensland Museum being I. 13/1450.

Family TETRAODONTIDÆ.

SPHEROIDES MULTISTRIATUS (Richardson).

Anchisomus multistriatus Richardson, Voy. Herald, 1854, p. 160, pl. xxix.
Tetrodon multistriatus Günther, Brit. Mus. Catal. Fish., viii, 1870, p. 285. After Richardson.

Type locality:—Southern Polynesia.

Body robust, the back rounded and much narrower than the belly, its upper contour feebly emarginate between the occiput and the dorsal fin, its depth 3·4 in its length, equal to its width immediately behind the pectoral, and 1·33 in the length of the head. Free caudal peduncle as long as the snout and anteriorly as deep as wide, becoming more compressed behind, where its depth is subequal to the interocular width. Head large, its depth about one tenth more than its width and 1·25 in its length, which is a little less than the trunk and 2·55 in the length of the body; occiput elevated, the osseous crest forming the highest point of the dorsal contour. Upper surface of snout linear and declivous, the mouth well below the level of the eye; anterior outline of chin somewhat receding, its depth 2·1 in the length of the snout; cheek very high, its depth, below the middle of the eye, but little less than the length of the snout. Eye small, not adnate to the lower lid, encroaching far upon the cephalic profile, its diameter 5·8 in the length of the head, 3·2 in that of the snout, and 2 in the interocular width, which is concave, with a low median longitudinal ridge. Nostrils pierced in a prominent papilla.

Skin of abdomen rather coarsely striated; rest of body and head more finely so, except the lower half of the tail and the lips, which are smooth. Back with four regular series of rather small distant two-rooted spines, which converge on the occiput, on which anteriorly they are more crowded than elsewhere; interorbital spines small and concealed; cheeks with two series of small widely separated spines and a small cluster in front of the gill-opening, the anterior border of which is protected by a row of much stronger spines; abdominal spines much more numerous and mostly concealed, arranged in about twenty regular series between the throat and the vent. Lateral line inconspicuous; sides with scarcely a trace of a lateral fold.

Dorsal and anal fins subfalciform, the former with 10 rays, the 2nd longest, 1·75 in the length of the head, and 2·55 times the length of its base. Anal with 9 rays, originating more than an eye-diameter behind and not much smaller than the dorsal, its length 2·66 in its height, which is 2·15 in the length of the head. Caudal rounded, its length 3·7 in that of the body and as long as the space between the nostril and the pectoral-axil. Pectoral rounded, with 17 rays, the upper longest, 2·12 in the length of the head.

Gill-opening wide, extending well above the pectoral, the base of which is 1·45 in its width; inner flap partially exposed. Vent behind the vertical from the last dorsal ray.

Imperial purple above, yellowish white below. Upper surface of head and body with numerous very narrow parallel longitudinal violet lines as wide as the interspaces; on the sides of the head the bars are much wider and subvertical, with a graduated inclination backwards, and may be broken up into spots or anastomosant; above the gill-openings and pectoral fins the obliquity becomes much more marked, but decreases again on the upper half of the flank and tail; the postpectoral area is white with a series of large lavender spots, followed by a similar series of darker spots, beyond which the sides are covered with a network of lavender bands enclosing round or oval purple spots of irregular size. Fins pale olive-green, edged and tipped with darker.

Etymology:—Latin: *multus*, many; *striatus*, literally "furrowed," but here used in the sense of "striped."

Reg. No. in the Queensland Museum—I. 13/1462.

How acquired:—Presented to the Queensland Museum by Mr. F. H. Taylor.

Range:—Originally described by Richardson from a specimen vaguely recorded as from "Southern Polynesia," this toadfish does not again appear to have fallen into expert hands, until the example here described was forwarded during last September to the State Museum.

ICHTHYOLOGICAL NOTES (No. 2).

By J. Douglas Ogilby.

SELACHII.

ORECTOLOBIDÆ.

In 1908 and 1909 two important papers dealing with the orectoloboid sharks appeared [1]; in both of these I was under the impression that the impossibility of recognizing the family *Hemiscylliidæ*, or indeed the genus *Hemiscyllium*, had been demonstrated beyond question. I was, therefore, somewhat astonished to find the family revived in 1913 in a paper entitled "The Hemiscylliid Sharks of the Philippine Archipelago."[2] But the "Key to the Genera of *Hemiscylliidæ*" therein defined is still more astounding, for I can not comprehend by what process of inductive reasoning the author divorces *Parascyllium* from its natural allies *Ginglymostoma* and *Nebrius*, and justifies its propinquity to *Chiloscyllium*, the two genera being near the apices of the *Orectolobida*. Furthermore *Chiloscyllium* can not logically be separated from *Stegostoma*, of which it is the natural ally, even the extraordinary method of anchoring the egg-case, described and figured by Ogilby and McCulloch,[3] being common to the two genera. Perhaps Smith was misled by Prof. Garman's key to the *Orectolobida*,[4] though that can not account for the jettisoning of *Stegostoma*. But to any student of these sharks the Professor's key must appear hopelessly artificial, and wholly lacking in the simplicity which is the chief merit of Regan's arrangement and, therefore, of ours which was developed independently. And while I am on the subject I may state that I see no reason, indeed no explanation is attempted, for the substitution of *Nebrodes*[5] for *Nebrius*[6] in Garman's Plagiostomia. Again, the characters on which Garman depends to validate his *Nebrodes macrurus* have long ago been shown to be unreliable in this family, and in fact our specimen,[7] from Darnley Island, shows as many characters of the Mauritian *macrurus* as of the Red Sea *concolor*; his species, therefore, like his genus should sink into

[1] Regan, Proc. Zool. Soc. London, 1908, pp. 347-364; Ogilby & McCulloch, Proc. Roy. Soc. N. S. Wales, xlii, 1909, pp. 264-299.

[2] Smith, Proc. U. S. Nat. Mus., xlv, 1913, pp. 567-569.

[3] Ibid., p. 289.

[4] Mem. Mus. Comp. Zool., xxxvi, 1913, p. 43.

[5] Garman, ibid., p. 56.

[6] Rüppell, Neue Wirbelth. Abyss., Fisch., 1838, p. 62.

[7] Mem. Queensl. Mus., ii, 1913, p. 90.

obscurity. Finally it was surely injudicious for Smith to have given to his new genus *Cirrhoscyllium* a name so closely resembling my *Cirriscyllium* of six years previously.[8]

CHILOSCYLLIUM TRISPECULARE (Richardson).[9]

In two of the three recent papers above mentioned, which refer to this species, the locality is merely copied from Richardson without comment; yet strangely enough, prior to our Port Darwin, N.T., record,[10] this shark had no claim whatever to a north-western habitat. Certainly Richardson gives the locality of his type as "Turtle Island, on the north-west coast of Australia." Taking, however, into consideration the ambiguity which was inseparable from all allusions to Australian geography in those days, and the fact that Lieut. Bynoe, who surveyed the Gulf of Carpentaria, obtained Richardson's second specimen "on the same coast" (as the first came from), I think we may fairly conclude that the Turtle Island referred to is the small island of that name, which lies between Mornington Island and the mainland near Bynoe's Inlet.[11] In any case this is not the only reference to the species on the Queensland Coast, since Günther recorded it from Cape York as far back as 1867.[12]

STEGOSTOMA TYGRINUM (Bonnaterre).

In describing the egg-case of this species in our review of the family above quoted, we remark that "it is without apparent means of attachment."[14] Through the receipt of a fine example, collected by Dr. Hamlyn-Harris at Cape Bowling-green, and containing a fully developed embryo, I am able to state that the method employed is similar to that of *Chiloscyllium punctatum*[15]; that is to say—the case is bag-shaped, and the handle, after its deposition, is woven to it and round some support.

SCYLIORHINIDÆ.

HALÆLURUS LABIOSUS (Waite).[16]

Bramble Cay, so often referred to in connection with this shark, is a small sandy islet 28 miles N. by E. from Darnley Island, and is under the jurisdiction of Queensland.

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[8] Ogilby, Proc. Roy. Soc. Queensl., xxi, 25 Aug. 1908, p. 4.

[9] Zool. Ereb. & Terr., ii, 1845, Ichth., p. 43, pl. xxviii.

[10] Ogilby & McCulloch, ibid., p. 293.

[11] I am indebted to my colleague, Mr. Douglas Rannie, for a knowledge of this island, which is not mentioned in the "Australia Directory" nor marked in any map.

[12] Ann. & Mag. Nat. Hist. (3) xx, 1867, p. 67.

[13] Encyc. Méth., Ichth., 1788, p. 8.

[14] Ogilby & McCulloch, ibid., p. 299.

[15] Müller & Henle, Plagiost., 1841, p. 18.

[16] Rec. Austr. Mus., vi., pt. 2, 15 Sept. 1905, p. 57.

GALEIDÆ.

RHIZOPRION gen. nov.

Teeth in the jaws similar, oblique, with a smooth median cusp and serrated outer base. (ῥίζα, root; πρίων, saw.)

Type:—*Carcharias (Scoliodon) cronidens* Klunzinger.[17]

This is the most common of all the smaller galeids on our coast, and has the right of inclusion in the New South Wales fauna, the "Endeavour" having trawled a specimen off Cape Byron. It is very distinct from *Scoliodon acutus*,[18] in the synonymy of which Garman has placed it.

CARCHARHINUS AMBLYRHYNCHOS (Bleeker).[19]

I have much pleasure in adding this rare shark to the Queensland fauna, Dr. Hamlyn-Harris having collected a specimen at Cape Bowling-green, N.Q. It is a young female and measures 605 millim.

PRISTIDÆ.

PRISTIS MICRODON Latham.[20]

Two rostra from Moreton Bay in the Queensland Museum belong to this species as described by Garman.[21] As far as these specimens are concerned it is much to be regretted that we have to use Latham's name, for they are without exception the most murderous weapons of the sort that I have yet seen; of exceptionally heavy build, and bearing enormously long, strong, and trenchant teeth, they are the very antithesis of the more slender and graceful rostrum of *P. zysron*.[22] These are the pair recorded by me[23] some time ago as *P. zephyreus*,[24] a species which Garman makes synonymous with *P. microdon*.

RHINOBATIDÆ.

RHINOBATUS ARMATUS Gray.[25]

An examination of several specimens of the common "shovelnose shark" of the Moreton Bay fishermen shows that the East Australian species is *R. armatus* Gray not *R. granulatus* Cuvier[26] as has been supposed. The two

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[17] Sitz. Akad. Wien, lxxx, i, 1879, p. 426, with figure of teeth.
[18] Rüppell, Neue Wirbelth. Abyss., Fisch., 1828, p. 65, pl. xviii, fig. 4.
[19] Nat. Tijds. Nederl. Ind., x, 1856, p. 467.
[20] Trans. Linn. Soc., ii, 1794, p. 280, pl. xxvi, fig. 4.
[21] Garman, ibid., p. 265.
[22] Bleeker, Nat. Tijds. Nederl. Ind., ii, 1851, p. 442.
[23] Ann. Queensl. Mus., No. 9, 1908, p. 4.
[24] Jordan & Starks, Proc. Calif. Acad. Sci., 1895, p. 383.
[25] In Hardwicke, Illustr. Ind. Zool., ii, 1834, pl. xcix.
[26] Règne Anim., ed. 2, ii, 1829, p. 396.

species may be easily distinguished by the width of the internarial region, which in *armatus* is less than half the length of the nostril, in *granulatus* about two thirds of the same.

RAJIDÆ.

I can not agree with Prof. Garman in his identification of the Australian Skates. He places *R. australis* Macleay[27] in the synonymy of *R. lemprieri* Richardson,[28] and *R. scabra* Ogilby[29] in that of *R. nasuta* Solander.[30] In my opinion both *R. australis* and *R. scabra* are valid species, while *R. lemprieri* is hardly separable from *R. nasuta*.

ISOSPONDYLI.

ELOPIDÆ.

Some years ago Mr. Tate Regan published "A Revision of the Fishes of the Genus *Elops*,"[31] in which he describes as new two species *E. hawaiensis* and *E. australis*. From an examination of the specimens in the Queensland and Amateur Fishermen's Museums, I am convinced that the characters on which Regan depends for the separation of the two forms are unstable, and that *E. australis* should, therefore, be reduced to a synonym of *E. hawaiensis*. Typical examples of both forms occur in Moreton Bay.

DOROSOMATIDÆ.

DOROSOMA COME (Richardson).

About 1845 Richardson described the "Perth Herring" of the Swan River as *Chatoessus come*,[32] which name Günther altered to *C. crebi*[33] in 1868; Castelnau added *C. richardsonii*[34] in 1873, in the belief that the "Bony Bream" of the Murray River System differed from the western fish; not content with this Zietz described the Central Australian form from the McDonnell Ranges as *C. horni*.[35] None of these three later names have any standing. True, Russell in 1803[36] published a figure of an Indian species over the Hindustani name "Kome"; true also that Richardson mistook his West Australian fish for Russell's, but I fail to understand how that vitiates the validity of Richardson's

[27] Proc. Linn. Soc. N.S. Wales, viii, pt. 4, 21 Feb. 1884, p. 461.
[28] Zool. Erebus & Terror, ii, 1845, p. 34, pl. xxiii.
[29] Catal. Palæich. Fish. Aust. Mus., 1888, p. 17.
[30] Solander MSS., in Müller and Henle, Plagiost., 1841, p. 150.
[31] Ann. & Mag. Nat. Hist. (8) iii, Jan. 1909, pp. 37-40.
[32] Zool. Erebus & Terror, ii, 1845, Ichth., p. 62, pl. xxxviii, figs. 7-10.
[33] Brit. Mus. Catal. Fish., vii, 1868, p. 407.
[34] Proc. Zool. Soc. Vic., ii, 1873, p. 144.
[35] Rep. Horn Exped., ii, 1896, p. 180, pl. xvi, fig. 6.
[36] Fish. Vizagapatam, ii, 1803, p. 76, pl. cxvi (as *Clupea thrissa* Linnæus).

name, then for the first time published as a correctly presented specific name; I, therefore, restore it to its proper place. This species, known throughout Queensland and along the entire watershed of the Darling as the "bony bream," appears to be generally distributed through the fresh waters of Australia, with the exception of the Middle and Southern cismontane Districts of New South Wales and Victoria, even ranging as far north as the fresh waters of the Carpentaria hinterland, whence the Queensland Museum has lately received a specimen from the Norman River. Our marine species is, however, *D. nasus* (Bloch).[37] I am unable to recognise *Konosirus* Jordan & Snyder[38] as a genus distinct from *Dorosoma*.[39]

CLUPEIDÆ.

DUSSUMIERIA HASSELTII Bleeker.[40]

The Queensland Museum possesses two examples of this fish, collected many years ago at Cape York by Mr. Kendal Broadbent. This is the first Australian record of the species.

PERCOIDEI.

CHEILODIPTERIDÆ.

GLOSSAMIA APRION (Richardson).[41]

Through the kindness of Dr. Chas. J. Taylor of Normanton the Queensland Museum has lately acquired a fine example of this fish from the fresh water of the Norman River. The specimen, a male of 178 millim., has the mouth crammed with ova in a very forward state, thus adding another to the long list of cheilodipterids, which employ this method of hatching out their young. The only previous knowledge I have of this fish is Richardson's description of the type from Port Essington, N.T. It is, therefore, an addition to the Queensland fauna.

CARANGIDÆ.

An examination of the type of *Caranx auriga* de Vis[42] shows it to be a typical *Citula oblonga*.[43] Though the correction was never published this was, I imagine, recognized by Mr. de Vis, as the bottle which held the type also contained two examples of *C. oblonga*, correctly labeled in his own handwriting. Four years ago Seale described a Philippine species as *Caranx auriga*,[44] and as that name can not of course stand, I propose *Citula virga* as a substitute name for that species.

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[37] *Clupea nasus* Bloch, Ausl. Fisch., xii, 1797, p. 117, pl. cccexxix.

[38] Proc. U. S. Nat. Mus., xxiii, 1900, p. 349.

[39] Rafinesque, Ichth. Ohiens., 1820, p. 39.

[40] Nat. Tijds. Nederl. Ind., i, 1851, p. 422.

[41] Ann. & Mag. Nat. Hist. (1) ix, 1842, p. 16.

[42] Proc. Linn. Soc. N. S. Wales, ix, 1884, p. 539.

[43] Cuvier & Valenciennes, Hist. Nat. Poiss., ix, 1833, p. 128.

[44] Philippine Journ. Sci., iv, 1910, p. 505.

SCARIDÆ.

CALLYODON CYANOTÆNIA (Bleeker).[45]

There are three examples of this beautiful fish in the Queensland Museum collected by Dr. J. R. Tosh at Southport, S.Q. The species having been first described from Java, and not since recorded from elsewhere, this too is an Australian addition.

ACANTHURIDÆ.

ACANTHURUS UNICORNIS (Forskal).[46]

Hitherto the most southerly locality from which this fish has been recorded on our coast is Dunk Island, N.Q., whence the Queensland Museum received a fine example some years ago through the kindness of Mr. E. J. Banfield. During last May, however, Mr. A. Davis, of the Brisbane Fish Market, notified the Museum of the capture of a pair in a mullet net at Cape Moreton, S.Q., one of which was with his usual liberality presented to the Museum, thus adding about 800 miles to the southerly range of the species. From Raine Island, an outlier of the Barrier Reef, lying a little north of the latitude of Cape Grenville, we also received a large example, along with which was the first Australian example of *A. tuberosus*.[47]

ZEBRASOMA HYPSELOPTERUM (Bleeker).[48]

From Raine Island also came two magnificent specimens of this rare fish, which was originally described from Flores, but does not appear to have been recorded since, so that it is also an addition to the Australian fauna. For these and the *Acanthuri* mentioned above we are indebted to the kindness of the Wanetta Pearling Co.

BLENNIOIDEI.

BLENNIIDÆ.

ALTICUS GRISEUS (de Vis).[49]

ALTICUS PAUPER (de Vis).[50]

ALTICUS SUBLINEATUS (de Vis).[51]

I have examined the types of these three species and, though they are in very bad condition, I have little hesitation in pronouncing them valid.

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[45] *Pseudoscarus cyanotænia* Bleeker, Versl. Akad. Amst., xii, 1861, p. 233.

[46] Descr. Anim., 1775, p. 63.

[47] Lacépède, Hist. Nat. Poiss., iii, 1802, p. 111, pl. vii, fig. 3.

[48] Nat. Tijds. Nederl. Ind., vi, 1854, p. 327.

[49] *Salarias griseus* de Vis, Proc. Linn. Soc. N. S. Wales, viii, pt. 4, 21 Feb. 1884, p. 450.

[50] *Salarias pauper* de Vis, ibid., ix, pt. 3, 29 Nov. 1884, p. 695.

[51] *Salarias sublineatus* de Vis, ibid.

CLINIDÆ.

TRIPTERYGION ANNULATUM Ramsay & Ogilby.[52]

The Amateur Fishermen's Association of Queensland possesses a fine example of this beautiful little fish. It was obtained in Moreton Bay, and measures 42 millim.

The characters separating *Enneapterygius* Rüppell[53] from *Tripterygion* Risso[54] do not appear to me to be worthy of generic recognition.

[52] Proc. Linn. Soc. N. S. Wales, xii, 1888, p. 1021.

[53] Neue Wirbelth. Abyss., Fisch., 1838, p. 2.

[54] Eur. Merid., iii, 1826, p. 241.

NOTES ON THE GENUS MEGACHILE AND SOME RARE INSECTS COLLECTED DURING 1913-14.

By Henry Hacker, F.E.S.

There are at present ninety-eight species of *Megachile* described from Australia, of which number thirty-nine occur in Queensland. I have taken the following species, mostly in the vicinity of Brisbane, during the last two seasons.

1. M. ustulata, Sm.—Females, Brisbane, December, January. This species takes possession of crannies and holes in timber, which they line with a resinous substance. On 8th January several *M. ustulata* were noticed entering crevices (unfortunately in an awkward place for observation) under the veranda of my house. Several bees which were about to enter these crevices were captured and were all found to be carrying masses of a resinous substance in their mandibles. Even while the bees were flying, the load in their mandibles, which had a white wool-like appearance, could be distinctly seen. With some difficulty a nest was dug out, in fragments, and was seen to consist of a single cell composed of resin which was quite soft in the centre but hard and brittle on the outside. This cell contained a larva about half-grown.

2. M. mystacea, Fab.—Males, females, Brisbane, November, January, February, March. This species has similar habits to the previous one in making resinous cells. The examples bred at the Museum had appropriated an old empty nest of *Sceliphron latum*. The clay cells of the wasp had been lined with resin and the old exit-holes had been neatly sealed up with the same material. The adult bees emerged singly from each cell on 27th November.

3. M. rhodura, Ckll.—Although the nest of this bee was not found, the insect is suspected of similar nesting habits to *M. ustulata* and *M. mystacea*. On 3rd December a number were seen visiting a Eucalyptus tree from which the resin had oozed and formed several hard patches on the trunk. The bees were fairly numerous on these patches, where they would remain for several minutes at a time. They were rather shy, and would not allow one to approach within two yards of them. At that distance one could distinctly see them moving their heads, and they appeared to be rasping the patch of resin with their mandibles. As both sexes were captured on these resin-patches, it would seem that in this species the male assists the female in constructing their cells.

4. M. hackeri, Ckll.—Males, females, Kelvin Grove, September, November, January, March; Sunnybank, September; Bribie Island, November. Two males and three females of this species were bred from an old clay nest of *Abispa,* which was obtained at Darra on 17th June. The bees emerged on 23rd December. This species also belongs to the "resin-workers," the cavities in the clay nest being lined and the entrance holes filled with resin in a similar manner to *M. derelicta*, but in these nests the resin is of a deep red colour and must be obtained from a different source.

5. M. rhodogastra, Ckll.—Males, females, Brisbane, Acclimatisation Gardens, November, February; also a variety of male from same locality, December. This species was bred from a nest found inside an iron pipe. The nest was of the usual elongate shape, made of pieces of leaves, from which five males and four females emerged. I should like to mention that in fresh specimens of males the colour is deeper than as stated in Professor Cockerell's description, the hair on the sides and apex of the abdomen being orange, while the hair on the face is pale golden.

6. M. chrysopyga, Sm.—Males, females, Brisbane, September, October, March, April. On flowers of *Daricsia ulicina.* A nest of this species was found at Kelvin Grove under some loose bark on a log. The cells were made of pieces of leaves, and the nest was of the usual cigar shape. Seven bees emerged in October.

A curious fact which is brought to light by the preceding notes is that all the four species which have been found to construct resinous nests have parallel-sided abdomens, while the two leaf-cutting species which were bred have shovel-shaped ones. This may be only a coincidence, but should the analogy between the form and habits of these bees remain constant, which can only be ascertained by breeding a larger number of species, it might be possible to divide this very large genus into two divisions according to the material which they utilise for nesting purposes.

7. M. pictiventris, Sm.—Brisbane, February; on flowers of *Duranta.* This species has a curious habit, when disturbed, of dropping from the flower perpendicularly for eighteen inches or two feet before taking wing. It was owing to the loss of several specimens through making a horizontal instead of an upward sweep with the net, that I became aware of this peculiarity. A number of wasps belonging to the family Thynnidæ have a similar habit of dropping before taking wing.

8. M. austeni, Ckll.—Stradbroke Island, December; both sexes on flowers of *Ipomœa.* The female, which differs in appearance from the male, has not previously been described. Female: Length about 15 mm.; expanse of wings about 22 mm. Face clothed with white hairs mixed with black, giving it a greyish appearance; cheeks, prothorax, and sides of median segment grey; vertex,

mesothorax, and scutellum with black hair; there is a small patch of white hair on each side at base of tegulæ. Antennæ black, short; scape about one third the length of flagellum. Anterior wings with apical half pale brown as in male, but the first recurrent nervure enters second submarginal cell nearer to the first transverso-cubital nervure than in the male. Legs black, stout, clothed with black hair; posterior legs very long and stout; hind tibiæ and first joint of tarsi densely clothed with black hair on inner side; hind spurs black. Abdomen black, elongate, parallel-sided, with a thin white fringe at apex of each segment, widest at sides: thick black hair at sides and apex of abdomen; ventral scopa black.

The female differs from the male in its larger size, darker clothing, position of first recurrent nervure, and the long posterior legs, which are larger in proportion to the size of the insect than in any other *Megachile* with which I am acquainted. Described from four females.

9. M. suffusipennis, Ckll.—Males, females, Brisbane, September, October, December, January; on flowers of *Daviesia ulicina.* The male, which has not been previously described, is smaller than the female. Its length is 11 mm. The chief difference between the sexes is that in the male the face is densely clothed with long golden hair; which on the clypeus is directed downwards, on the front, upwards; while on the facial foveæ it is directed outwards towards the eyes. Other markings and colours are exactly as in the female. Antennæ black, a little longer than in the female.

10. M. macularis, D.T.—Males, females, Brisbane, November, January, March; on flowers of *Bursaria spinosa.*

11. M. abdominalis, Sm.—Males, females, Sunnybank, September, October; on flowers of *Jacksonia scoparia.*

12. M. ferox, Sm.—Males, Brisbane, September, October; on flowers of *Daviesia ulicina.*

13. M. heliophila, Ckll.—Males, Sunnybank, September; Kelvin Grove, September; on flowers of *Daviesia ulicina.*

14. M. quinquelineata, Ckll.—Females, Kelvin Grove, October, November, February, March; on flowers of *Daviesia ulicina.*

15. M. simplex, Sm.—Males, females, Kelvin Grove and Sunnybank, September, October, November; on flowers of *Daviesia ulicina.*

It will be noticed that a large number of species were taken at flowers of *Daviesia ulicina.* This plant is a great resort for bees in this district belonging to the genus *Megachile,* as it flowers more or less all the summer. I have noticed that they occasionally leave it for some of the Eucalypts, but usually return when the Eucalpytus flowers are over.

16. M. serricauda, Ckll.—Males, Brisbane, February; on flowers of *Mesembryanthemum.*

17. M. recisa, Ckll.—Males, females, Brisbane, September, October; on flowers of *Daviesia ulicina.*

18. M. derelicta, Ckll.—Males, females, Kelvin Grove, September, October, December; on flowers of *Daviesia ulicina.*

It will be seen by the dates of capture of some of the commoner species that there is a spring and an autumn brood. I am of opinion that when further data is available it will be found that every species, even the largest, is double-brooded; the long summers which we enjoy here making this easily possible.

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ORDER HYMENOPTERA, FAMILY MASARIDÆ.

Paragia hirsuta, Meade-Waldo.—A male of this rare insect was taken at Sunnybank, near Brisbane, on 14th November. This is the second recorded example, the type, also a male, being taken by F. P. Dodd at Cairns, North Queensland. Unfortunately I did not recognise the prize when it was captured, or I would have noted the circumstances with a view to getting more. A large number of *Odynerus* and *Alastor* were being taken at the time, and the *Paragia* was bottled under the erroneous impression that it was an *Odynerus.* Nothing appears to be known about the life-history of *Paragia hirsuta,* but the fact that it was captured along with the two species mentioned suggests that it is in some way associated, perhaps as a parasite, with them. The capture of this insect in this locality is extremely gratifying in consideration of the facts stated by the describer of the species[1]:—"The rarity of these insects is shown by the fact that such diligent collectors as Mr. R. E. Turner and his brother the late Gilbert Turner only collected one specimen during a twenty years' residence in North Queensland, while Dr. Perkins, to whom the Museum is indebted for the species described below, has only received three specimens from Mr. F. P. Dodd at long intervals."

FAMILY MEGALYRIDÆ.

Megalyra minuta, Froggatt.—A female was taken at Sunnybank, near Brisbane, on 19th November. It was found at rest on the trunk of a large Eucalyptus tree. The head has not previously been described, as it was missing in the type specimen. It is globular, wider than the thorax, and connected with the thorax by a distinct neck; black, shining, covered with coarse but shallow punctures, and with scattered black hairs, longest on the vertex; eyes prominent, oval; face from just above insertion of antennæ to mandibles abruptly truncate; antennæ 14-jointed, basal joints bright ferruginous, gradually getting darker, apical joints black, basal joint swollen, glabrous, second joint about half the length of third, the third and following joints of equal length, and covered with a fine pubescence, mandibles ferruginous.

[1] Ann. Mag. Nat. Hist., ser. 8, vol. viii, p. 747, 1911.

This is the first capture in Queensland of *M. minuta,* the habitat of the type specimen being given as Melbourne, Victoria.

Order ORTHOPTERA, Family EMBIIDÆ.

Oligotoma gurneyi, Froggatt.—A series of these remarkable insects was obtained by Mr. J. Douglas Ogilby, of the Museum staff, at his residence in Spring Hill, Brisbane. They are nocturnal in their habits, and are attracted by light. The dates of capture extended from December to March, during which time thirteen were obtained. No more were seen until May, when another was captured. They were all of one sex, apparently males. This is the first record of the occurrence of *Oligotoma gurneyi* in Queensland.

Order NEUROPTERA.

Psychopsis illidgi, Froggatt.—A perfect female of this species was captured at Tambourine Mountain on 29th December. It was attracted by the light of my lamp in the scrub while I was examining the tree trunks for Coleoptera. As an indication of the rarity of this insect, the author in describing it states[2]:—"I am indebted to Mr. C. French for the first specimen of this beautiful insect. But I have since received a second from Mr. Illidge, who informs me that both were taken flying to a lighted lamp in the evening; and that in the course of forty years' collecting in Southern Queensland he had never taken it before."

[2] Pro. Linn. Soc. N.S.W., p. 456, 1903.

AUSTRALIAN HYMENOPTERA CHALCIDOIDEA—I.

SECOND SUPPLEMENT.[1]

By A. A. Girault.

Magnification as in previous descriptions.

Family TRICHOGRAMMATIDÆ.

CHÆTOSTRICHINI.

Genus NEOBRACHISTA Girault.

There are two funicle joints, the first transverse but wider than the ring-joints. The scape of the male is dilated ventrad, sometimes enormously.

1. NEOBRACHISTA TRIFASCIATA new species of A. P. Dodd and A. A. Girault.

Female:—Length, 1.10 mm.

Like *novifasciata* Girault but besides the three black stripes across the abdomen, there is a spot on each side of meson just caudad of the first stripe and a smaller spot on each side of meson farther caudad and more laterad; the second and third cross-stripes are very broad, the second not interrupted at the meson; the scutum is *without* the median sulcus which is present on the scutellum only; the scape is distinctly more compressed. Compared with the type of *novifasciata*.

Male:—not known.

Described from one female captured by sweeping in the jungle, January 15, 1914 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2119*, Queensland Museum, Brisbane, the above specimen on a slide.

2. NEOBRACHISTA FASCIATA NIGRIVENTRIS Girault.

The male of this variety is probably that originally described with *fasciata*, the abdomen black. The scape is distinctly dilated ventrad, uniformly for its entire length. The male has been re-examined.

3. NEOBRACHISTA FASCIATA Girault.

The male of this species is probably represented by a specimen caught April 4, 1914 at Gordonvale, Queensland, by sweeping grass in forest. It agrees in coloration as far as I could see and in structure except that the scape is enormously dilated ventrad, very much more so than in the male mentioned above, the rectangular, flat scape only somewhat longer than wide. Scutellum with a median groove, the scutum simple.

4. NEOBRACHISTA INCOMPERTA new species.

Neobrachista fasciata Girault, *partim*.

Female:—Colored like *novifasciata*, the abdomen with three distinct black cross-stripes, one proximad, two distad but the second stripe is complete, not distinctly interrupted at the

[1] *See* Memoirs Queensland Museum, II, pp. 101 to 106.

meson. Also the marginal vein is not distinctly longer than wide, only slightly so. Thorax not seen nor hind wings.

Habitat: Cooktown, Queensland. Jungle.

Type: No. *Hy 2120*, Queensland Museum, Brisbane, one female on a slide in fragments.

5. NEOBRACHISTA NOVIFASCIATA new species.

Antea, first supplement, p. 101. Length, 1 mm. Second stripe of abdomen a little distad of middle, the first a little out from base. Funicle 1 not quite half the length of 2 (in the genotype only a fourth the length). June. Type on a slide.

Genus NEOBRACHISTELLA Girault.

1. NEOBRACHISTELLA MAXIMA Girault.

One female, sweeping grass in forest, Gordonvale (Cairns), Queensland, April 10, 1914. Wholly black, the vertex orange yellow, the thorax scaly reticulate, the so-called third ring-joint is twice the size of the others (as regards width) nearly but somewhat longer. Scape short. Mandibles tridentate. The median groove of thorax is confirmed.

Genus CENTROBIELLA Girault.

1. CENTROBIELLA MAGNA Girault.

One male, forest, Gordonvale, Queensland, April 12, 1914. The antennæ and legs are dusky black; the curved line of cilia back from the stigmal vein includes about six setæ. Fore wings with about seventeen lines of regular discal cilia, the caudal wings with a pair of conspicuous lines cephalad and a very faint line caudad.

Also one female, the same place, May 4, 1914, by sweeping in the forest. It agrees with the male. The ovipositor is extruded for half the length of the abdomen. Caudal wings with three lines of discal cilia, the third faint. Thorax densely scaly-shagreened. Pedicel and club dusky black.

In this genus, apparently, the funicle is 2-jointed as in *Neobrachistella*, that is, the first joint very short and more or less hidden.

Genus OLIGOSITA Haliday.

1. OLIGOSITA SCURRA new species.

Female:—Length, 0.70 mm.

Differs from *americana* in having the funicle joint distinctly longer than wide, the body golden yellow, immaculate but the distal two club joints black; the discal cilia visible (low power) only near apex. Funicle joint distinctly longer than club 1 which is not much longer than wide, the middle club joint nearly twice its (the first's) length, longest of the flagellum, the third joint a little shorter than the second. Pedicel a little shorter than the funicle. Fore wings a little wider than their longest marginal cilia. Differs from *sacra* in having the funicle longer than the proximal club joint, the proximal tarsal joints long and the club blackish on more than the distal half.

Male:—Not known.

Described from one female captured by sweeping in forest, September 16, 1913 (A. P. Dodd).

Habitat: Kuranda, Queensland.

Type: No. *Hy 2121*, Queensland Museum, Brisbane, the above on a slide.

2. OLIGOSITA AMERICANA AUSTRALIS new variety.

Oligosita americana Girault, *antea*, I, pp. 76, 86.

Differs from *americana* in having the proximal tarsal joint longer and more slender, the

pedicel long and slender, distinctly longer than wide and not cupshaped and the funicle joint somewhat longer.

Habitat: Brisbane and Roma, Queensland.

Type: No. *Hy 2423*, Queensland Museum, one of the Roma females on a slide; the second one was typical.

3. OLIGOSITA INERMICLAVA new species.

Female:—Length, 0.85 mm.

Differs from *poincarei* in that there are five cross-stripes of dusky on the abdomen, the first faint, the antennal club is without a prominent terminal spine, the pedicel is elongate, nearly twice the length of the funicle joint, the scutum bears a long, spindle-shaped dusky marking on each side of meson and the fore wings are hyaline, their marginal cilia somewhat shorter. From *brevicilia* differs in having the abdominal stripes complete, the scutum yellow except for the spindle-shaped markings, the funicle joint somewhat longer than wide, not distinctly wider than long, the hyaline wings and the more regular alignment of the discal ciliation of the fore wing; also the longer ovipositor which is inserted at about middle of abdomen. Sides of thorax black. Caudal wings very narrow. Stigmal spot small, distinct. Distal club joint longest, distinctly longer than the funicle which is somewhat longer than wide, somewhat longer than club 1. Venter of abdomen on each side of ovipositor to margins, black. Antennæ dusky, the legs pallid dusky. Compared with types of *poincarei* and *brevicilia*.

Described from one female taken in forest, May 18, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2423*, Queensland Museum, Brisbane, the specimen on a slide.

4. OLIGOSITA PULLICORPUS new species.

Female:—Length, 0.45 mm.

Exactly similar to *pulchra* but the whole body dusky black, the legs and antennæ dusky pallid, the hind femur dusky, the pedicel rather long. The discal cilia of the fore wing appear to be sparser than in *pulchra*, only a line or two being made out (high power). Mandibles bidentate.

Male:—Not known.

Described from one female captured in forest, June 30, 1912.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2424*, Queensland Museum, Brisbane, the specimen on a slide.

5. OLIGOSITA BREVICILIA new species.

Female:—Length, 0.70 mm.

Pale golden yellow and in my table of Australian species running to *aurea* but the abdomen bears four dusky cross-stripes, the fourth complete, the other three represented by three pairs of transverse marginal spots. Vertex, sides of propodeum, scutum except lateral margins and the median line distinctly, scutellum except median line distinctly, dusky black. Wings uniformly, distinctly yet lightly dusky. Caudal legs and cephalic femur dusky. Antennæ wholly dusky. Longest marginal cilia of fore wing somewhat less than half the greatest width of those wings. Further differs from *aurea* in having distinctly wider fore wings, in having the funicle joint distinctly wider than long, much shorter marginal cilia on fore wing and the much shorter ovipositor which is inserted at distal fourth. Fore wings with about a dozen lines of distinct discal cilia. Differs from *pullicorpus* in the broader wings, shorter marginal cilia, uniformly infuscated fore wing, shorter ovipositor and so forth, and in lacking a terminal spine on club (which is long and distinct in *pullicorpus*). In *aurea* the stripes on abdomen are very obscure and the club bears no distinct terminal spine. Stigmal spot very small. From *poincarei* differs in coloration, slender wings, smaller substigmal spot, absence of terminal seta on club (long and stout in *poincarei*), shorter ovipositor and so on. Mandibles tridentate.

Antennal club stout. Pedicel thrice the length of the distinctly wider than long funicle joint. Hind wings slender, curved, three lines of discal cilia, the caudal one faint.

Male:—Not known.

Described from one female taken in the forest, April 15, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2425*, Queensland Museum, Brisbane, the specimen on a slide.

PAROLIGOSITA new subgenus of Girault and A. P. Dodd.

Female:—The same as *Oligosita* but the second division of the club is absent, the club but 2-jointed, the second joint twice the length of the first.

Male:—Not known.

Type: The following species.

1. PAROLIGOSITA BICLAVATA new species.

Female:—Length, about 0.55 mm.

Agrees with the description of *Oligosita australiensis* Girault but the knob of the stigmal vein is dusky, the longest marginal fringes of the fore wing are somewhat shorter than the greatest width of those wings and the scutum bears a median sulcus. Funicle joint quadrate. Hind wings missing.

Described from one female taken from a window, February 17, 1913.

Habitat: Ingham, Queensland.

Type: No. *Hy 3453*, Queensland Museum, Brisbane, the above specimen on a slide with the type *Arrhenophagoidea coloripes*.

GENUS UFENS Girault.

1. UFENS ALBITIBIÆ new species.

Female:—Length, 0.70 mm.

Differs from *flavipes* in having the discal ciliation of the fore wing denser, only a few of the lines standing out distinctly somewhat as in *piceipes*; and also in having all of the femora black. Fore wings with about 25 lines of discal cilia.

Male:—Not known.

Described from one female captured by sweeping miscellaneous vegetation along the banks of the Pioneer River, October 15, 1911.

Habitat: Mackay, Queensland.

Type: No. *Hy 3426*, Queensland Museum, Brisbane, the above specimen on a slide.

2. UFENS QUADRIFASCIATUS new species.

Female:—Like *flavipes* Girault in wings and color of the legs but at once distinguished from it and all other species by the color of the abdomen which is black with four encircling stripes of white distributed over the surface. These white bands appear to be the incisions between the segments but they were present when the insect was captured and are not due to pressure after mounting. In other species of the genus I could not make them appear after application of pressure to the mounts.

Male:—Not known.

Described from one female captured in jungle pocket, April 2, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2427*, Queensland Museum, Brisbane, the specimen on a slide.

3. UFENS BINOTATUS new species.

Female:—Like the preceding but besides the vertex, the mesoscutum, scutellum and postscutellum are orange yellow, the scutum with a rather large spindle-shaped black marking

on each side of the meson each reaching somewhat three fourths the way to apex. Thorax distinctly longitudinally lineolated. Hind tibiæ more or less dusky just below knees. Marginal vein subequal to stigmal. Scape white, antenna black.

From one female caught on a native grass in forest, April 4, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2128*, Queensland Museum, Brisbane, the specimen on a slide.

A second female taken May 13, same place, had the base of abdomen yellow transversely.

Genus PARUFENS Girault.

The antennæ bear two ring-joints. Removed from *Ufens*.

1. PARUFENS ARGENTITIBIÆ new species.

Female:—Length, 0.70 mm.

Jet black, the vertex more or less yellowish, the trochanters, tibiæ, knees and tarsi silvery white, the wings hyaline. Pedicel nearly twice the length of the funicle joint which is cupshaped, its greatest width (apex) a little more than its length; club acuminate-ovate, longer than the scape, without a terminal seta, its three joints longer than wide. Pedicel apparently with a coarse scaly sculpture. Fore wings moderate in width, with about 15 regular lines of discal cilia and a curved line from the stigmal vein with about four cilia. Stigmal vein long, the marginal longer than it but not much more so. Hind wings short, moderately broad, obtusely pointed at apex, bearing four lines of discal cilia, two cephalad and distinct, two caudad and faint; caudal marginal fringes about as long as the greatest width. Marginal fringes of fore wing very short.

Differs from the genotype only in having the tibiæ silvery besides the tarsi, the funicle joint cupshaped and apparently in having one more line of discal cilia in the hind wing.

Male:—Not known.

Described from one female captured December 24, 1912 in forest.

Habitat: Capeville (Pentland), Queensland.

Type: No. *Hy 2129*, Queensland Museum, Brisbane, the specimen on a slide with the type of *Aprostocetus saltensis* Girault.

2. PARUFENS ARGENTIPES Girault.

A male of this species was captured January 4, 1913 at Capeville (Pentland), Queensland, by sweeping in forest. It differs from the female in bearing a distinctly 2-jointed funicle, the antennæ as in the female of *Ufens* Girault. Thus the female *Ufens* is like the male of *Parufens* except that there are two ring-joints in the latter. In the female of *argentipes*, the pedicel is coarsely sculptured into scales, while the funicle is much wider than long and apparently solid while in the male the pedicel seems simple, the funicle plainly 2-jointed and only somewhat wider than long, the division transverse. The male genitalia are extruded distinctly for some length (half that of the abdomen) and resemble an ovipositor. The mandibles are tridentate in both sexes, the hind wings with three rows of discal cilia, two cephalic. The ring-joints in the male are distinct but the second one adheres closely to the funicle.

Genus ABBELLA Girault.

1. ABBELLA SEXGUTTATA new species.

Female:—Very similar to *mira* Girault but the two distal spots on the abdomen do not form cross-stripes but are widely separated, the second spot widest, all wider than long. The substigmal spot is very pronounced as in *mira* and the club is dusky, its first joint black as in *mira*.

Male:—Not known.

From one female taken in forest, March 31, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2430*, Queensland Museum, Brisbane, the specimen on a slide.

The female of *subflava* recorded elsewhere from Gordonvale, October 29, 1912 (window) was really this species.

BRACHYGRAMMATELLA new genus.

Female:—Allied with and similar to *Brachygramma* Girault but the antennæ are 8-jointed bearing two distinct ring-joints, the club rather long and conic-ovate. Also the scape is short, the ovipositor much longer being inserted a little out from base, the antennæ are inserted a little dorsad of the ventral ends of the eyes, the marginal vein though broad or thick is thrice longer than wide, the discal ciliation of the fore wing is extraordinarily dense and fine, hence normal, there is a short, stout hairless line on fore wing from (caudo-proximad) the end of the minute stigmal vein and the caudal wings bear about seven lines of discal cilia. The marginal cilia of the fore wing are extraordinarily short and minute, barely visible. Thorax *apparently* with a distinct median groove for its entire length. Tibial spurs single, absent on cephalic legs. Caudal trochanters with a flattened or compressed dorsal lobe.

Male:—Not known.

Type: The following species.

1. BRACHYGRAMMATELLA NEBULOSA new species.

Female:—Length, 0.70 mm.

Sooty black, the vertex and scutellum orange yellow, the fore wings rather lightly infuscated out to apex of venation, the marginal vein black; infuscation of fore wing deeper under marginal vein and more or less across from apex of venation. Knees, tips of tibiæ and the tarsi silvery white. Color of scape not seen. Fore wings with a more or less clear oblique (caudo-distad) hairless line from end of venation forming with the true hairless line a short inverted V. Marginal vein hispid. Hairless line of fore wing with about four short lines of discal cilia proximad of it, as coarse as the rest of the discal cilia opposite the marginal vein, the main part of the discal ciliation much finer, none of it coarse or long. Hind femur compressed, the tibial spurs short. Fore wings oblately rounded at apex, shaped somewhat as in *Ufens*. Pedicel somewhat longer than wide at apex; funicle subquadrate, somewhat shorter than the pedicel, both joints wider than long, the first a little shorter, the suture between them oblique; club 1 longer than 2, longer than the pedicel, 2 conical, subequal to the pedicel, without a terminal seta. Legs rather short. Fore wings naked (or nearly) under submarginal vein. Mandibles with three minute teeth. Caudal marginal cilia of caudal wing distinctly shorter than the width of those wings. Club about twice the length of the pedicel.

Described from one female captured by sweeping grass in forest, April 8, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2431*, Queensland Museum, Brisbane, the specimen on a slide with type of *Lathromerella unfasciata* Girault and several other chalcids.

MIRUFENS new genus.

Female:—Like *Japania* Girault but the ovipositor is inserted some distance out from base; wings as in *Ufens* but the stigmal vein is distinctly much longer than the marginal. Cephalic tibia armed outwardly (dorsad) with six small but distinct teeth-like projections (placed from base to apex). Scutellum with a narrow but distinct median grooved line, a similar line indicated at apex (caudad) of scutum. Mandibles 4-dentate. Caudal femur somewhat swollen, the caudal tibiæ serrulate dorsad. Scape much shorter than the club. Marginal vein nearly thrice longer than wide.

Male:—Not known.

Type: The following species.

1. MIRUFENS DENTIPES new species.

Female:—Length, 1.25 mm. Robust.

Jet black, the vertex orange yellow, also the antennæ except the concolorous scape and pedicel. Wings hyaline, the venation yellow, the stigmal vein black. Knees, tips of tibiæ and the tarsi silvery white. Funicle 1 somewhat longer than wide, 2 a little wider than long, 1 being nearly as long as the pedicel; club somewhat longer than the rest of the flagellum. Fore wings with about 16 regular lines of discal cilia, the oblique line from the stigmal vein long (about nine setæ). Hind wings broad, with a pair of distinct lines of discal cilia cephalad and a very faint pair of lines caudad, the caudal marginal fringes shorter than the greatest width of the blade, the cephalic cilia very short and uniform. Sculpture of thorax very fine, nearly glazed. Tarsal joints rather long. Middle tibial spur long and slender.

Described from one female taken by sweeping grass in forest, April 4, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2132*, Queensland Museum, Brisbane, the specimen on a slide.

PSEUDBRACHYGRAMMA new genus.

Female:—Like *Brachygrammatella* Girault but the club is solid and the thick marginal vein is shorter, not quite twice longer than wide. Also, there is no hairless line from the venation.

Male:—Not known.

Type: The following species.

1. PSEUDBRACHYGRAMMA PERPLEXA new species. Genotype.

Female:—Length, 0.90 mm.

Agrees in every detail with *Aphelinodea speciosissima* Girault with which it is congeneric but differing from the original description of that species as follows: The caudal wings are dusky at tip and bear *four* lines of discal cilia, the third line disappearing caudad; the comet-shaped cross-stripe on fore wing from apex of the venation is practically all of the infuscation under the venation; the scutellum is contrasting lemon yellow.

Male:—Not known.

Described from one female captured in forest, April 15, 1914 (A. P. Dodd).

Habitat: Cloncurry, Queensland.

Type: No. *Hy 2133*, Queensland Museum, Brisbane, the specimen on a slide with the type of *Ncocasca multiguttata* Girault.

2. PSEUDBRACHYGRAMMA SPECIOSISSIMA Girault.

Aphelinoidea speciosissima Girault, *antea*.

Female:—*See antea*, pp. 105-107.

3. PSEUDBRACHYGRAMMA DUBIA new species.

Male:—Like the female *speciosissima*; the club enlarged and short, the two joints not greatly differing in length, the pedicel flattened. The two club joints deeply divided, the distal joint short and conical without a terminal seta, the proximal one somewhat wider than long. Agreeing with the description of *speciosissima* but the head all yellow, the abdomen all black, the hind wings with *six* rows of discal cilia. Middle tibiæ with stiff black bristles dorsad.

A male, December 3, 1913 by sweeping in forest.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2134*, Queensland Museum, the male on a slide.

APSEUDOGRAMMA new genus.

Female:—Differs from *Pseudogramma* Girault in that the funicle is 1-jointed and the stigmal vein elongate, nearly as long as the marginal, the latter about half the length of the submarginal. Ovipositor inserted at about the middle of the abdomen. Mandibles tridentate. Abdomen no longer than the thorax, obliquely truncate. Hind tibial spur single, short.

1. APSEUDOGRAMMA POPEI new species. Genotype.

Female:—Length, 0.58 mm.

Jet black, the proximal two joints of the tarsi, tips of tibiæ narrowly and the scape pallid. Scutum simple, reticulately scaly. Fore wing dusky from base to distad a little over half from apex of stigmal vein to the apex of the blade; venation blackish. Discal cilia of fore wing moderately dense, subnormal, a line from apex of stigmal vein to apex of wing being about the only one complete and regular; about sixteen lines of discal cilia across widest part of blade but no oblique line from the stigmal vein. Marginal cilia of fore wing short but not extremely short. Caudal wings short, moderate in width, with three complete lines of discal cilia, two along cephalic margin, the third caudal. Longest (caudal) marginal cilia of hind wing subequal to those wings' greatest width, distinctly longer than the longest marginal cilia of the fore wing. Scape short, subequal to club, a little longer than the pedicel, funicle and ring-joint combined. Pedicel longer than the funicle which is a little wider than long. Ring-joint distinct. Club with long, white streaks, funicle with a transverse oblique one proximad. Club blunt at apex.

From one female captured by sweeping secondary forest growth, May 22, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2435,* Queensland Museum, Brisbane, the specimen on a slide with type of *Oligosita inermiclava.*

Dedicated to Alexander Pope.

NEOCENTROBIELLA new genus.

Female:—Differs from *Centrobiella* in bearing two distinct ring and funicle joints and the fore wing lacks the oblique line of cilia from the stigmal vein.

Male:—Not known.

Type: The following species.

1. NEOCENTROBIELLA RARA new species.

Female:—Length, 0.75 mm., excluding the ovipositor which is extruded for a length equal to two thirds that of the abdomen.

Black; median line of scutum and scutellum and lateral margins of scutum, all narrowly golden yellow; head golden yellow; occiput dusky; antennæ and legs wholly concolorous; fore wings lightly infuscated from base to apex of venation. Antennæ 9-jointed, the funicle distinctly 2-jointed, the first joint one and a half times longer than wide, the second oval, barely longer than wide; two distinct ring-joints; pedicel longer than funicle 1, two thirds the length of the scape which is much shorter than the long, rather loosely jointed club; club 2 longest, nearly twice the length of 1, longer than the pedicel; club 1 a little longer than wide; club 3 a little shorter than club 2. Fore wings with about a dozen lines of discal cilia most of them regular and distinct, the longest marginal cilia not quite half the greatest wing width; the discal ciliation is irregular opposite the stigmal vein. Caudal wings slender, acute, with two distinct lines of discal cilia, the caudal marginal cilia barely shorter than the longest marginal cilia of the fore wing. Tarsi slender. Club without a terminal spine but with several short, thick setæ from sides of apex.

Described from one female taken in forest, May 13, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2436,* Queensland Museum, Brisbane, the specimen on a slide.

TRIBE OPHIONEURINI.

The name of this tribe has been changed from Lathromerini because the oldest included genus is *Ophioncurus* Ratzburg.

GENUS APHELINOIDEA Girault.

1. APHELINOIDEA TINTINNABULUM new species.

Differs from *howardii* and the other Australian species in having the discal ciliation absent just distad of venation somewhat as in *plutella* but the naked stripe is not so clearly delimited as in that species. Legs and antennæ pallid, suffused slightly with dusky, the femora dusky. Face, sides of thorax, occiput and obscure cross-stripes on abdomen blackish. Dorsum of thorax orange yellow. Only one or two cephalic lines of discal cilia reach the marginal vein, the others disappearing about the length of that vein away. Scutellum paler.

Male:—Not known.

Described from two females captured by sweeping forest, January 6, 1913.

Habitat: Capeville (Pentland), Queensland.

Type: No. *Hy 2457*, Queensland Museum, Brisbane, two females on a slide together.

2. APHELINOIDEA PAINEI Girault.

One female, Gordonvale, April 8, 1914, sweeping grass in forest.

3. APHELINOIDEA SPECIOSISSIMA Girault belongs to *Pseudbrachygramma.*

GENUS LATHROMERELLA Girault.

A female captured at Gordonvale, Queensland, January 13, 1913, by sweeping in forest bore much less black on the pleura of thorax. The species is not uncommon in the type locality.

1. LATHROMERELLA FASCIATA Girault.

Five females, forest, type locality, 2,000 feet, June 3. Metathorax and propodeum laterad black. The two ring-joints are verified.

2. LATHROMERELLA OCCIDENTALIS new species.

Female:—Length, 1 mm. excluding ovipositor which is extruded a little over a fourth the length of the abdomen. Differs from the genotype in lacking a terminal spine on club and the ovipositor is distinctly extruded.

Black, the vertex, scutum and scutellum deep orange yellow, the scutum on each side of the meson with two conspicuous elongate dusky black markings reaching distad of middle. Fore wings lightly dusky from base distad half way to apex of wing from end of venation. Fore wings with about 14 lines of discal cilia in regular lines the marginal cilia not long but a little longer than usual. Legs dusky, the tips of tibiæ and tarsi pallid. Antennæ dusky. Ovipositor inserted near base. Fourth club joint longest, wider than long, the fifth joint conical, longer than wide.

From one female captured by sweeping forest, April 16, 1914 (A. P. Dodd).

Habitat: Clonevurry, Queensland.

Type: No. *Hy 2438*, Queensland Museum, Brisbane, the specimen on a slide with type of *Ufens binotatus.*

3. LATHROMERELLA CHINDERAENSIS new species.

Female:—Length, 0.75 mm. Antennæ with the distinct terminal spine. Abdomen normal.

Jet black, the scutum (excepting for a long wedgeshaped spot on each side of meson from cephalic margin), scutellum, axillæ, meson of propodeum, abdomen across base dorsad

and vertex orange yellow. Tibiæ dusky, pallid along distal half. Fore wings with a substigmal spot, irregularly infuscated near base. Marginal fringes of fore wing nearly as long as the caudal marginal fringes of hind wing. Otherwise like *unfasciata*.

From one female taken by sweeping in mangrove, May 14, 1914 (A. P. Dodd).

Habitat: Chindera, Tweed River, New South Wales.

Type: No. *Hy 2139*, Queensland Museum, Brisbane, the female on a slide.

4. LATHROMERELLA LONGICILIATA new species.

Female:—Length, 0.70 mm.

Bright, deep golden yellow; head, cephalic part of thorax (pronotum and a little of mesonotum), propodeum and distal third of abdomen dusky or jet black; legs dusky. Fore wings distinctly dusky but irregularly so yet there is a distinct dusky stripe across from the stigmal vein and which is rather broad; under the submarginal vein the black is also distinctly dusky, elsewhere faintly so. Marginal vein a little longer than the submarginal. Agrees with the generic diagnosis except that the fore wings bear rather long marginal cilia (somewhat less than a third the greatest wing width) and the abdomen is shorter, the ovipositor inserted at middle (not extruded); fore wings where widest with about a dozen lines of discal cilia which are not dense but in more or less regular lines, each cilium very short. Hind wings with at least two complete lines of discal cilia, both cephalic. Mandibles tridentate, the third tooth shorter than the others. Antennæ dusky; fifth club joint longest, subequal to the terminal spine or a little shorter. Vertex transversely lineolated. Marginal cilia of hind wing caudad barely longer than the longest marginal cilia of fore wing.

From one female captured in forest, April 4, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2140*, Queensland Museum, Brisbane, the specimen on a slide.

What appears to be the male of this species lacks the terminal spine on the antenna and the whole abdomen is dusky black, the meson of propodeum yellow and most of scutum, the latter bearing two long, spindle-shaped black markings quite as in *Ufens binotatus*. The fore wings are more uniformly infuscated.

One male captured with the female and mounted with the type of *Ufens binotatus* Girault.

5. LATHROMERELLA UNFASCIATA new species.

Female:—Length, 0.60 mm.

Golden yellow; a wedgeshaped marking on each side of meson of scutum cephalad, antennæ, caudal legs except tibiæ and tarsi, sides of pronotum and propodeum, dusky; a rather broad stripe across abdomen at distal three fourths and a rather large round spot between this and apex on each side of meson, black. Fore wings with marginal cilia not long, the blade lightly infuscated only from stigmal vein; marginal cilia of fore wing distinctly shorter than the caudal cilia of hind wing.

Male:—Not known.

From one female captured by sweeping grass in forest, April 8, 1914. A second specimen June 10, 1914, in the same place. A third female, September, Pentland, Queensland.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2141*, Queensland Museum, Brisbane, the first specimen on a slide.

The cross-stripe of abdomen is really very narrowly divided along the meson, the mesal ends of each side turned caudad. There is also a more obscure stripe across just before tip of abdomen.

GENUS LATHROMEROIDES Girault.

1. LATHROMEROIDES LONGICORPUS Girault.

One female, Gordonvale (Cairns), Queensland, March 31, 1914, by sweeping grasses in forest. Two females, same place, April 8, 1914.

2. LATHROMEROIDES FASCIATIVENTRIS new species.

Antea, first supplement, p. 106. Length, 1.30 mm. Mandibles tridentate. The type was captured at 2,000 feet, June 3 and is on a slide.

PARUSCANOIDEA new genus.

Female:—In my table of genera running to *Uscanoidea* Girault from which it differs in bearing a long slender marginal vein, which is as long as the submarginal and about thrice the length of the stigmal; the latter is somewhat longer than in *Uscanoidea* Girault. The fore wing is quite naked. The scape is distinctly shorter than the club. Valves of ovipositor slightly, distinctly extruded. Hind wing narrow, acute, with very long caudal marginal fringes.

Male:—Not known.

Type: The following species.

1. PARUSCANOIDEA DICKENSI new species.

Female:—Length, 0.65 mm.

Black, the head and thorax bright lemon yellow but the cephalic scutum with a short longitudinal black marking on each side of meson. Trochanters, knees, tarsi and distal three fourths of tibiæ pale, antennæ dusky pallid. The fore wing is lightly infuscated proximad, seen more particularly in a more or less indefinite stripe across from the stigmal vein and an indefinite, suffused patch under the submarginal, the space between the two subhyaline. Hind femur compressed.

Described from one female taken in forest, January 4, 1912.

Habitat: Capeville (Pentland), Queensland.

Type: No. *Hy 2422*, Queensland Museum, Brisbane, the specimen on a slide with *Coccophagus auricaput*.

Dedicated to Charles Dickens.

Genus TUMIDICLAVA Girault.

1. TUMIDICLAVA CILIATA Girault.

On page 97, line 4 in the original description of this species (Part I) the peculiar grass in which the Cooktown specimens were captured is a common sedge locally called "nutgrass." On April 4, 1914, I captured a female of this species by sweeping native grasses in the forest; on this specimen I clearly saw the yellow median line on the scutum which makes the species agree with the North American genotype. Is this a case of parallel evolution?

2. TUMIDICLAVA NIVEIPES new species.

Female:—Similar to *ciliata* but the black on the body is much lighter yet forming the same pattern while the legs are yellowish white except hind coxa and femur. Also, the abdomen bears a complete line of marginal dots and about four abbreviated cross-stripes centrally. Body scaly.

Described from one female captured with the *ciliata* mentioned above. A second female same place, April 16 following and one on April 25, 1914.

Habitat: Gordonvale (Cairns), Queensland. Grass in forest.

Type: No. *Hy 2443*, Queensland Museum, Brisbane, the first female on a slide with the type of *Mirufens dentipes* Girault.

3. TUMIDICLAVA CANALIS new species.

Male:—Length, 0.80 mm.

Golden yellow, the occiput, antennæ, scutum except median line and lateral margins, seven pairs of round marginal spots on abdomen from base to apex and three or four dots

along meson of abdomen in a line from base, dusky black. Thus much like the species *niveipes* but more robust, the antennal club lacks the prominent terminal spine and the mesothorax has a complete median sulcus. The legs are dusky.

From one male taken by sweeping secondary forest growth, May 23, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2444*, Queensland Museum, Brisbane, the male specimen on a slide.

Tribe TRICHOGRAMMATINI.

Genus TRICHOGRAMMA Westwood.

1. TRICHOGRAMMA AUSTRALICUM Girault.

In Java (Pasoeroen) this species parasitizes the eggs of *Chilo infuscatellus*, an unknown tortricid associated with cane, *Grapholeta schistaceana* and *Diatrea striatalis*. In specimens of this species reared from *Chilo* my attention was called by P. van der Goot to the presence on the male and female antenna of the minute bladder-like appendages resembling conidial spores (and thought characteristic of *Trichogrammatoidea*). In the specimens sent me I observed these on the female funicle. Sometimes the female abdomen bears two broad black bands one at base, one at tip; it may be wholly blackish to jet black.

I have a female from moth eggs, Chindera, Tweed River, New South Wales, May 13, 1914 (A. P. Dodd) and many specimens from a mass of noctuid eggs on *Melaleuca*, forest, Gordonvale, June 1, 1914.

This paper taken with Part I and the first supplement completes our present knowledge of the Australian Trichogrammatidæ. Students of the group should consult my rather full treatment of the world's genera now in course of publication in the Bulletin of the Wisconsin (U.S.A.) Natural History Society.

Students of this group must always be thorough and careful since the minute forms contained therein have proved *bêtes noires* to many of the most acute Hymenopterologists and in studying them we must be certain to forsake our usual confidence and be content to feel the way with Caution and Diffidence as constant companions.[2]

The following members of the family are common in their several habitats: *Neobrachista fasciata; Ufens flavipes; Oligosita pulchra, Oligosita minima, Oligosita sacra; Tumidiclava ciliata; Trichogramma australicum* and *Abbella subflava.*

[2] Methods of collecting and describing members of this family are given in the second supplement of Part II.

AUSTRALIAN HYMENOPTERA CHALCIDOIDEA—II.

SECOND SUPPLEMENT.[1]

By A. A. Girault.

Family MYMARIDÆ.

OOCTONINI.

Genus CAMPTOPTERA Foerster.

1. CAMPTOPTERA GREGI Girault.

By mistake, in the original description, the name of this species was spelled *gregsi*. The single European species (*papaveris*) is not like the single North American species with which this species was compared. But the European species formerly identified by me as *papaveris* Foerster is a new species which is now named *saintpierrei* (*Camptoptera papaveris* Foerster in Girault, 1909). The species occurs in England and is much like the North American *pulla* of Girault. The species *gregi* is common in its type locality.

Genus OOCTONUS Haliday.

1. OOCTONUS FLAVIPES new species of Girault and A. P. Dodd.

Male:—Length, 1.60 mm.

Black; legs (including coxæ) bright golden yellow; abdominal petiole golden yellow.

Thorax normal. Scutum shining, finely reticulate, caudad sublongitudinally rugose; parapsides shining, with very faint reticulation. Axillæ glabrous; scutellum glabrous at immediate base, thence scaly and with half a dozen longitudinal rugæ. Propodeum rugose, the meson broadly smooth, bounded at caudal half by two sharp carinæ, rather wide apart. Antennæ 13-jointed, long and slender, distinctly longer than the body; pedicel small; second funicle joint the longest, one half longer than first; others gradually and slightly shortening, the tenth subequal to first. Fore wings long, rather broad but of the graceful type; somewhat infuscated; longest marginal cilia equal to one seventh greatest wing width; discal cilia present under marginal vein in two long and two shorter rows; discal cilia not fine, dense, arranged in about 30 rows.

Described from one male caught by sweeping in open forest, 1,300 feet, September 16, 1913 (A. P. Dodd).

Habitat: Kuranda, Queensland.

Type: No. *Hy 2445*, Queensland Museum, Brisbane, the male on a slide.

2. OOCTONUS GIGAS new species. .

Female:—Length, 2.10 mm.

Jet black, the petiole of abdomen, hind coxæ, trochanters, scape and pedicel pale or straw yellow, the legs reddish brown, the hind tibiæ below knees darker; distal third of blade

[1] *See* Volumes I and II, Memoirs Queensland Museum.

of hind wing sooty, the fore wing also sooty at same place, accented proximad (a little over half way to apex from end of venation) in a large ovate black spot narrowly connected along the middle to a smaller ovate spot in center of blade farther proximad (just distad of end of venation but in midlongitudinal line of blade). Petiole distinctly longer than wide but not as long as hind coxæ. Marginal vein elongate, nearly as long as the submarginal; marginal fringes of fore wing short, at widest part about 32 lines of dense discal cilia. Scape slender; pedicel shorter than funicle 1 which is suffused with yellow; funicles 2 and 3 subequal, longest, thrice longer than wide, the following joints regularly shortening, 8 longer than wide, about half the length of 2. Club long. Strigil strong. Hind tibial spur single. Cephalic femur fuscous toward base. A groove on scutum at distal third at meson. No sclerites between scutum and scutellum, the latter very long, rectangular, longer than wide; axillæ widely separated. Parapsidal furrows complete. Thorax polygonally reticulate or scaly. Propodeum long, longer than scutum, with two curved median carinæ forking from base and a long, oblique (meso-caudad) one running to meson at apex but originating at a fovea at cephalic margin far laterad. Abdominal segments subequal, moderate in length.

Male:—Not known.

Described from one female captured in jungle, September 15, 1913.

Habitat: Kuranda, Queensland.

Type: No. *Hy 2146*, Queensland Museum, Brisbane, the above specimen on a slide.

3. OOCTONUS PROMETHEUS new species.

Female:—Length, 2.00 mm.

Very similar to *gigas* but differing in having the femora black, in being a little smaller, in lacking a median groove on distal scutum, in lacking the lateral carinæ on the propodeum and in having the distal spot on fore wing deeper black and not quite as large, more clearly delimited. Otherwise (except in sculpture) identical with *gigas* with which I have compared it. Thorax finely polygonally scaly, the propodeum subglabrous, with a distinct median channel whose margins are carinated, otherwise plane. Scutellum as long as the long propodeum, simple, the posteutellum transverse linear. Lateral margin of propodeum carinated and a few interlacing carinæ caudo-laterad. Axillæ widely separated. Median channel of propodeum narrowing caudad.

Male:—Not known.

Described from one female captured in jungle, February 11, 1914 (A. P. Dodd).

Habitat: Babinda, Queensland.

Type: No. *Hy 2147*, Queensland Museum, Brisbane, the specimen on a slide with type of *Gonatocerus renani* Girault.

Genus COSMOCOMOIDEA Howard.

There are no Australian members of this genus, the two species formerly placed here belonging to *Gonatocerus* Nees. The genus belongs to this tribe.

Tribe GONATOCERINI.

EUSTOCHOMORPHA new genus.

Form slender, graceful, the abdomen long, slender, longer than the head and thorax combined, the ovipositor inserted at base, long, exserted for some length, the extruded portion over a third that of the abdomen; legs normal, the tarsi 5-jointed. Thorax long, the parapsidal furrows complete, the sclerites normal, no phragma. Antennæ 12-jointed, the club 2-jointed. Fore wings somewhat as in *Signiphora*, the marginal fringes moderately short (the longest about a fourth the greatest wing width), the discal ciliation sparse. Hind wings rather short, slender.

1 EUSTOCHOMORPHA HAECKELI new species. Female. Genotype.

Length, 1.25 mm. excluding the ovipositor. Uniformly brownish black, the wings hyaline, the legs, scape and pedicel yellowish, the coxæ and hind tibiæ and femora more or less concolorous; funicle joints all distinctly shorter than the pedicel, the first two subequal, barely longer than wide, the third plainly longer than them but only slightly longer than any of the following joints of the funicle; club short, wider than the filiform funicle, its distal joint plainly longer than the other, somewhat longer than any of the funicle joints.

Habitat: Gordonvale (Cairns), Queensland. Forest, December 31, 1912.

Type: No. *Hy 2448*, Queensland Museum, Brisbane. On a slide.

Dedicated to Ernst Haeckel.

GENUS GONATOCERUS Nees.

Synonyms: *Agonatocerus* Girault; *Gonatoceroides* Girault.

1. GONATOCERUS TOLSTOII Girault. Female.

Length, 0.80 mm.

Jet black and thus in the group of species including *nox* and *lomonosoffi* with which it is more closely allied. It differs from the latter in the inequality of the funicle joints, the first four joints all short but unequal, 1 and 2 equal (1 sometimes longer), globular, small, 3 and 4 equal (4 a little larger) globular but about twice larger, 4 less than half the length of 5 which is longest; joint 6 distinctly shortest of the distal four funicle joints, while 7 and 8 are subequal or nearly to 5. Pedicel as long as distal funicle joint. In *lomonosoffi*, joint 6 subequal to 5. Fore wings slightly broader in this species but otherwise the two cannot be distinguished.

Habitat: Gordonvale (Cairns), Queensland. Forest, 1,500 feet, May 29.

Type: No. *Hy 2449*, Queensland Museum, Brisbane. On a slide.

2. GONATOCERUS LOMONOSOFFI Girault. Female.

Length, 0.70 mm. Small for the genus.

Jet black and thus distinguished from all species of the genus in Australia excepting *nox* from which it differs as follows: Smaller, fore wings distinctly not so slender but rather of the broader type (yet not wide, only about fifteen lines of discal cilia), the first three funicle joints short and subequal, fourth only a little longer than third, the latter not longer than second as in *nox*, 5 plainly twice the length of 3, not so in *nox*; discal ciliation of fore wings absent under marginal vein and the body somewhat darker. Wings hyaline.

Habitat: Kuranda, Queensland. Jungle, May 18.

Type: No. *Hy 3152*, Queensland Museum, Brisbane, the female on a slide.

3. GONATOCERUS BICOLOR Girault.

Only the female is known. There is now no reason for thinking that a mesopræscutum is present.

4. GONATOCERUS AUSTRALIENSIS Perkins. Male, female.

"*Ooctonus* Haliday.

"Male antennæ with 13 joints, the scape flattened and short, the second joint very small and roundish, the following ones subequally elongate, flattened and wide, but not so wide as long. Antennæ of female 11-jointed; scape very long, set on an elongate pedicel, so as to appear obsoletely 2-jointed, and as long as the three following joints together; club as long as the three preceding joints together. Posterior ocelli wide apart, perhaps placed close to the eye margins, the collapse of the head in dried specimens making it impossible to ascertain this point. Scutellum large and elongate, longer than the mesonotum; the axillæ encroaching a little

or not at all on the scapulæ; propodeum with two raised lines or longitudinal carinæ. Tarsi 5-jointed. Apical cilia of front wings short, many times shorter than the greatest width of the wings. Abdomen pedicellate.

"*Ooctonus australiensis*, sp. nov.

"Black, shining, antennæ of the male black, of the female with the scape mostly pale yellowish-brown, the second joint also more or less brownish, the following three blackish, the sixth also dark but less so than the preceding, seventh, eighth and ninth white, tenth much wider than the ninth and black, club black. Legs brownish yellow or testaceous, posterior tibiæ more or less darkened. Abdomen pedicellate, brownish black or piceous. Length 1⅝ mm.

"*Habitat:* Cairns, Queensland; two examples extracted from eggs of a conspicuous *Tettigonia* common in the cane fields."

5. GONATOCERUS CINGULATUS Perkins. Female.

"Yellow; the face, the whole of the flagellum of the antennæ, two adjacent spots on the front of the mesonotum which do not reach back to the middle, one on the anterior angle of the scapulæ, another on each side adjoining the tegulæ and a median one between these, the propodeum, the meso- and metapleura, hind coxæ, all tibiæ, tarsi above, two bands near middle of abdomen (appearing as one very broad one in contracted specimens) and sheaths of ovipositor dark, black or blackish fuscous. Scape and second joint of antennæ and front and middle coxæ more or less dark on margins. Front tibiæ with distinct, small, stout spines, placed remotely and in line. Length 1⅝ mm.

"*Habitat:* Brisbane, Queensland."

6. GONATOCERUS SULCATUS new species.

Male:—Length, 1.25 mm.

Velvety black, the wings transparent, the body marked with intense golden yellow as follows: Head (excepting upper occiput and vertex), prothorax, legs except caudal two pairs of tibiæ (caudal tibiæ darker than middle, black), sides and venter of cephalic half of mesothorax and the scape. Antennæ dusky yellow, the scape very short (without the bulla wider than long), the pedicel a little shorter than the scape; funicle 1 over twice the size of the pedicel, a little longer than wide, 2 a little longer than 1, 3 and following each a little longer than 2, subequal; funicle and club joints longitudinally striate; joints 9 and 10 of funicle a little the longest, nearly twice longer than wide and not so thick as 1. Thorax coarsely scaly, the propodeum with fine sculpture, long, with a median carina and carinated lateral margin. Scutum with a distinct median sulcus. Hind tibial spur long, slender. Cephalic tibiæ armed as in *shakespeari*. Caudal wings broad with short caudal marginal cilia. Wings not visible plainly in balsam mounts but the marginal cilia very short.

Female:—Not known.

Described from one male captured April 15, 1914 in forest (A. P. Dodd).

Habitat: Cloncurry, Queensland.

Type: No. *Hy 2450*, Queensland Museum, Brisbane, the specimen on a slide with type of *Gonatocerus ayrensis* Girault.

7. GONATOCERUS NONSULCATUS new species.

Male:—Length, 1 mm.

Very similar to the preceding but the scutum simple, the thoracic sculpture somewhat finer, the mesothorax concolorous and also the caudal coxæ and femora. Fore wings subtruncate at apex, very transparent. Pronotum above dark.

Female:—Unknown.

From one male captured at the same place with *sulcatus*.

Habitat: Cloncurry, Queensland.

Type: No. *Hy 2451*, Queensland Museum, Brisbane, the specimen on a slide.

8. GONATOCERUS ANGUSTIVENTRIS new species of Girault and A. P. Dodd.

Female:—Length, 1.50 mm.

Black; abdomen a little suffused with brown; knees and tarsi yellow; antennal scape suffused with yellow.

With the habitus of *renani* Girault and *grotiusi* Girault. Scutum with a median groove; scutum and scutellum with fine, polygonal scaly sculpture. Propodeum with a groove on each side of the meson, the grooves rather widely separated, also with a carina near each lateral margin, in the dorsal aspect. Abdomen tapering at its base. Antennæ 11-jointed, first funicle joint much shorter and narrower than the pedicel; second distinctly longer than first, as long as pedicel; third distinctly longer than second, three times as long as wide; 4-8 very slightly and gradually shortening, the eighth as long as the pedicel; club almost as long as the three preceding joints united. Fore wings long, rather broad, but of the graceful type; somewhat infuscated; longest marginal cilia equal to one eighth greatest wing width; discal cilia absent beneath the marginal vein, not fine, dense, arranged in about 30 rows.

Male:—Not known.

Described from one female captured by sweeping in open forest, 1,300 feet, September 16, 1913 (A. P. Dodd).

Habitat: Kuranda, Queensland.

Type: No. *Hy 2152*, Queensland Museum, Brisbane, the specimen on a slide.

9. GONATOCERUS SHAKESPEAREI new species.

Female:—Length, 1.35 mm., excluding ovipositor which is extruded for a distance equal to from a third to half the length of the abdomen.

Long and slender, the abdomen longer than the rest of the body. Golden yellow, the wings hyaline; flagellum, dorsal edge of scape, valves of ovipositor, a cuneate marking on each side of median line of cephalic half of scutum; a large triangular spot covering most of each parapside; center of scutellum at base (in one specimen down whole of meson broadly); meson of propodeum broadly and distal one or two tarsal joints, dusky black. First four funicle joints subequal, subglobular, that portion of the funicle slenderer than the following; joints 5-8 of funicle subequal, each wider and over twice the length of any of the joints 1-4, 7 a little shorter than the others. Discal cilia of fore wing disappearing some distance out from apex of venation, not dense except disto-cephalad yet well distributed over the blade, the fore wings moderately broad (about 16 lines of cilia where broadest), oblately rounded at apex; marginal cilia of fore wing indistinct, very short, absent around apex. Caudal wings rather broad (about five lines of discal cilia), the caudal marginal cilia about as long (or not quite) as the blade is wide. Thorax longitudinally shagreened, no grooves. Abdomen tapering toward base. Proximal tarsal joint long and slender (except in cephalic legs).

Male:—Not known.

Described from two females captured by sweeping in forest, October 10, 1913 (G. F. Hill).

Habitat: Port Darwin, Northern Territory and Cloncurry, Queensland.

Types: No. *Hy 2135*, Queensland Museum, Brisbane, the specimens on a slide (Port Darwin).

A female of this species was captured at Cloncurry, April 13, 1914 (A. P. Dodd). The specimen, evidently a variant, had somewhat different fore wings and slightly longer funicle joints but otherwise the same. The cephalic tibiæ are armed with scattered, distinct, short, thorn-like spines.

10. GONATOCERUS BOSWELLI new species.

Female:—Length, 1.05 mm.

Golden yellow; two rather broad dusky stripes across dorsum of abdomen, the first a little distad of middle. Cephalic half of scutum, scutellum except the lateral margins, propodeum excepting a narrow yellow line some distance laterad of meson, tegulæ, postscutellum,

flagellum and hind tibiæ, black. Occiput dusky. Caudal margin of the black of scutum prolonged caudad a little at meson. Tip of ovipositor valves jet black. Wings hyaline. Funicles 4 and 5 longest, 4 narrower than 5, each somewhat longer than wide; joints 2 and 3 a little longer than wide, 1 subquadrate, the pedicel subequal to 3; 6 and 7 subequal, slightly shorter than 4 or 5. Club rather long. Longest marginal cilia of fore wing between a fourth and a fifth of the greatest wing width where there are about 25 lines of fine discal ciliation. Fore wings of the graceful type but not narrow. Valves of ovipositor slightly extruded.

Male:—Not known.

Described from one female taken in jungle, March 6, 1914 (A. P. Dodd).

Habitat: Cooktown, Queensland.

Type: No. *Hy 2454*, Queensland Museum, Brisbane, the specimen on a slide.

11. GONATOCERUS CIRCUMVAGUS new species.

Female:—Length, 2.25 mm.

Like *mirissimus* but the abdomen and the hind tibiæ are black, the first funicle joint over twice longer than wide and slenderer, joints 2 and 3 longest, distinctly over twice the length of the pedicel. More like *poincarei* but the hind tibiæ and the pedicel are black, the longitudinal black stripe on the fore wing from immediate apex and is longer, abruptly fading but the fainter portion continuous, not broken, leaving a faint, proximal spot in the mid-longitudinal line. Thorax shining black, with no distinct sculpture, the pronotum long and quadrate and with either a groove or a carina along each side like parapsidal furrows; mesopræscutum absent. Scutellum very long. Hind tibial spurs double. Fore wings somewhat broader than those in *poincarei*.

Described from one female captured by sweeping in jungle, September 15, 1913 (A. P. Dodd).

Habitat: Kuranda, Queensland.

Type: No. *Hy 2455*, Queensland Museum, Brisbane, the above specimen on a tag (with the type of *G. carlylei*).

12. GONATOCERUS HUMBOLDTI Girault. Genotype of *Agonatocerus*.

Agonatocerus humboldti Girault.

This species was originally described erroneously, parts of the antennæ having been lost while two pieces of them became so disposed in the mount of the single specimen as to make these organs appear 13-jointed. Also, the median sulcus of the scutum is in reality a yellow line down the meson; the lateral margins of the scutum are also yellow. The species is valid but resembles *huygheusi* and *metschnikoffi*. From the former it differs in the color of the thorax and abdomen, its slender build and narrow fore wings; and from *metschnikoffi* in having the yellow on the thorax, more yellow at base of abdomen, in the color of the legs and the more graceful body and appendages. Also, the distal half of the scape is colored. The four funicle distal joints are each about twice longer than wide.

Compared with types of all Australian species.

13. GONATOCERUS AUSTRALICA Girault. Genotype of *Gonatoceroides* Girault.

Gonatoceroides australica Girault.

This species appears to be valid but should be compared with the following from which it seems to differ as follows: From *goethei* in that the legs are colored and all of thorax, being otherwise the same as *goethei*; from *haeckeli* in lacking the swollen hind femora present in that species; from *huygheusi* in having funicle 4 longer than 6 and not longer than the pedicel; from *fasciativentris* in not having pleurum or lateral line of abdomen yellow and there is no regular discal ciliation under the marginal vein but only a V-shaped line; from *darwini* in that the fore wings are as in *haeckeli*.

In the species *fasciativentris*, the so-called yellow stripes across the abdomen are the incisions between the segments.

14. GONATOCERUS TRICOLOR Girault.

Antea, first supplement, p. 113, omit last sentence in line 2-3 as irrelevant.

What appeared to be the female was captured May 20, 1914, by sweeping in forest, type locality. Distal half of abdomen and hind tibiæ (only) in this specimen dusky black. The antennæ are similar to those of *bicolor* and *tricolor* may be but a variety of *bicolor* but very doubtfully so.

15. GONATOCERUS GREGI new species.

Male:—Length, 1.75 mm.

Jet black; first two pairs of knees, tarsi (hind tarsi darker) and cephalic tibiæ yellowish. Fore wing with two broad cross-stripes of dusky, the first across a little distad of venation (longer cephalo-caudad than proximo-distad), the second at apex, wider than the first, occupying about a fourth of the wing surface and separated from the first by a space narrower than the width of the latter. Thus, very similar to *renani* except that the cephalic femora are black, the first band of the fore wing is very distinctly much less than its own width distad of apex of venation and there is no infuscation under the marginal vein. Also, there is no median grooved line on the scutum; the proximal margin of second stripe of wing is less convex and the hind wings are dusky at tip. Cephalic tibiæ armed with scattered prickle-like setæ (*renani* also). Funicle joints nearly twice longer than wide, 1 shorter, all distinctly longer than the pedicel. The discal cilia of fore wing nearly reaches venation in this species (some distance distad of it in *renani*). Hind tibial spurs double.

From one male caught by miscellaneous sweeping, May 11, 1914 (A. P. Dodd).

Habitat: Murwillumbah, New South Wales.

Type: No. *Hy 2456*, Queensland Museum, Brisbane, the specimen on a slide.

16. GONATOCERUS FLOSCULUS new species.

Female:—Of the same build and so on of *shakespearei* but black, the venter of prothorax and under sides of mesonotum yellowish, the last two pairs of tibiæ and scape dusky, the caudal femur dark like their tibiæ. Knees, femora, tips of tibiæ and the tarsi pale yellowish. Antennæ about as in the named species but the scape is more compressed, the distal four funicle joints somewhat longer, also the club. Fore wings as in *shakespearei* but the marginal vein is a little longer. The ovipositor is a little shorter. Scutum with an obscure median sulcus centrally. Thorax rather coarsely coriaceous, the propodeum smooth, noncarinate. Scutellum simple. Otherwise as in *shakespearei*. Colored much like *nonsulcatus* but that species has no obscure median groove on scutum, the propodeum bears a median carina and the fore wings bear extremely fine discal ciliation which is very faint. Moreover, *nonsulcatus* has a normal abdomen (as probably all males of the species with females of the peculiar habitus of this species do). In *nonsulcatus*, the cephalic tibia is no longer than the combined lengths of the first three joints of the tarsus; in this species it is longer than the three joints taken together. In this species grooves on each side of the meson of propodeum as in *augustivertris* Girault and Dodd are faintly indicated.

From one female caught in forest, Tweed River, May 4, 1914 (A. P. Dodd).

Habitat: Tweed Heads, New South Wales.

Type: No. *Hy 2457*, Queensland Museum, Brisbane, the specimen on a slide with male type of *haeckeli*.

17. GONATOCERUS COMPTEI Girault.

Female:—The distal half of the abdomen sometimes jet, the scutellum with a large round black spot at base centrally and the funicle joints all a little longer. Base of abdomen sometimes not striped.

A female, forest, May 27, 1914, type locality.

TRIBE ANAPHINI.

GENUS PARANAPHOIDEA Girault.

The thorax bears a phragma.

1. PARANAPHOIDEA CAUDATA new species.

Female:—Length, 1 mm.

Very similar to *egregia* Girault but the conspicuous black line along each side of the postscutellum absent, this sclerite wholly yellow; the so-called V-shaped yellow marking on the scutum (in reality, two acute, long, black wedges from cephalad on a yellow ground and extending about to caudal margin) is absent since the black areas from cephalic margin on each side are rectangular, somewhat longer than wide but extending only half way to the caudal margin leaving the meson and lateral margins of cephalic half of scutum narrowly yellow. The legs are wholly yellow and the antennæ except the club. Funicle 1 is somewhat larger. Otherwise identical.

Male:—Unknown.

Described from female taken from a window, February 3, 1912.

Habitat: Cooktown, Queensland.

Type: No. *Hy 2459*, Queensland Museum, Brisbane, the specimen on a slide with the type of *egregia*.

2. PARANAPHOIDEA INTERMEDIA new species.

Female:—Length, 1.10 mm.

Exactly similar to *egregia* but distinctly larger and characterised by having finer discal cilation on the fore wing (about 32 lines) and the head is all yellow, together with the legs. The funicle joints are all somewhat longer, the cephalic tibiæ bear strigils. In both species, there is a triangular black spot laterad on postscutellum. In all four species of the genus, the axillæ are margined with yellow caudad and laterad.

Male:—Not known.

From one female captured on April 6, 1914, by sweeping grass in forest.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2460*, Queensland Museum, Brisbane, the specimen on a slide.

A male of a species of this genus collected by Mr. A. P. Dodd at Cloncurry, Queensland, April, 1914, resembled closely the genotype. The male antennæ are as in *Stethynium*. The color pattern of the thorax appears to be a generic characteristic.

GENUS POLYNEMOIDEA Girault.

This genus differs fundamentally from *Stethynium* Enock in lacking the thoracic phragma.

GENUS STETHYNIUM Enock.

1. STETHYNIUM CINCTIVENTRIS Girault.

Female:—Length, 0.80 mm.

With the habitus of *Anaphes*. Black, the abdomen with a broad band of silvery white around its base which occupies nearly a third of the surface; legs white or nearly, the antennæ black, the first three funicle joints cylindrical, the second longest, 1 and 3 more or less equal, a third shorter than 2; 6 subglobular, a third shorter than 5 while 4 is a fourth shorter than 5; proximal club joint nearly half of the club. Fore wings rather narrow and graceful, with about fourteen lines of discal cilia across the widest part of the blade, the longest marginal cilia about half the greatest width. Hind wings rather narrow and curved, with five lines of fine discal cilia toward tip, the third and fourth lines soon disappearing. Scutum more or less pallid especially at caudal half, the parapsides and scutellum white. Strigil present. Scutellum rectangular, the mesopostscutellum much longer than it and joined onto the phragma (two

pairs of sclerites between scutellum and postscutellum). Fore wings with a more or less distinct subfuscous stripe across at about the middle. Valves of ovipositor slightly exserted. Tibial spurs single.

Male:—Not known.

Described from one female captured September 3, 1913 by sweeping in a jungle pocket.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2461*, Queensland Museum, Brisbane, the above specimen on a slide with an *Anagrus* male.

2. STETHYNIUM FLAVINOTÆ new species.

Female:—Length, 0.65 mm.

Black, the wings hyaline, the body marked with golden yellow as follows: Legs, the whole of the large, peltate scutellum which bears a deep median sulcus, distal fifth of scutum, the sclerites between scutum and scutellum, center of vertex, caudal half of each parapside and much of the face. Antennæ black suffused somewhat with yellow; distal funicle joint a little longer than wide, subequal to 1, 2 longest, plainly longer than wide, 3 and 4 subequal, slightly shorter than 2; distal club joint longest. Fore wings very broad (about 36 lines of very fine discal cilia), their longest marginal fringes not much more than a fifth the greatest wing width. Hind wings broad, bearing about six lines of sparse discal cilia, curved, their longest marginal fringes distinctly longer than those of the fore wing. Phragma and strigils present.

Male:—The same but only the propleura, mesopleura, ventral cheeks, the face and the base and margins of phragma are yellow. Thorax very finely sculptured. Club 2-jointed. Marginal cilia of fore wing longer.

Described from one female from fleshy galls on gum, March 20, 1911 and two males labelled "52. From galls," all from the collections of the National Museum, Melbourne, Victoria.

Habitat: Melbourne ?, Victoria.

Type: No. *Hy 2462*, Queensland Museum, Brisbane, the above female on a slide with the types of *perlatipenne*.

3. STETHYNIUM GLADIUS new species.

Female:—Length, 0.75 mm., excluding ovipositor which is extruded for nearly half the length of the abdomen and dusky black.

Pale golden yellow, marked with black as follows: Cephalic half of pronotum except lateral margins and meson (two large wedgeshaped spots), cephalic half of each parapside, a round dot on axilla cephalad, two dots on abdomen one on each side of meson just before tip, two dots on meson of same just out from base in a line longitudinally and a narrow cross-stripe a little distad of middle accented on each side at lateral margin and obscurely, narrowly divided along meson. Scutellum with three grooves, one median. Legs, scape and pedicel yellow, rest of antenna blackish. Funicle 1 shortest, barely longer than wide, 3 longest, somewhat longer than wide, the others subequal to each other and to the pedicel. Fore wings slender, their longest marginal cilia about three fourths the greatest wing width and caudo-distad. Usual for the genus with the exception of the ovipositor. Pedicel globular. Hind wings linear, with two complete lines of discal cilia along each margin.

From one female caught in forest, June 26, 1914.

Habitat: Gordonvale, Queensland.

Type: No. *Hy 2463*, Queensland Museum, Brisbane, the female on a slide with type *maxwelli*.

4. STETHYNIUM MAXWELLI new species.

Female:—Length, 1.12 mm.

Jet black, the large mesopostscutellum contrasting golden yellow and with two lateral grooved lines. Legs pale yellow, the caudal femur dusky. Fore wings lightly infuscated,

outlining a large distal ovate hyaline area with the broader end at apex of the blade and its narrower end penetrating centrally more than half way from apex to apex of venation. Tip of abdomen whitish, the pallid dusky valves of the ovipositor extruded a short distance. Thorax as in *cinctiventris* which also appears to have the lateral grooves on postscutellum; however, here, the scutellum is longer and widens somewhat caudad. Scape and pedicel pallid dusky; funicle 3 longest, subequal to the pedicel, nearly twice longer than wide, 4 and 6 shortest, subglobular, 2 and 5 subequal, somewhat shorter than 3, 1 a little shorter than 2; club only slightly wider than the funicle, its middle joint shortest, distinctly wider than long. Strigil distinct. Ovipositor inserted at base of abdomen. Fore wings as in *Paranophoidea*, truncate at apex, bearing about 32 lines of fine discal ciliation, the marginal cilia very short. Caudal wings broad, with about 7 lines of discal cilia, their caudal marginal cilia distinctly not as long as the greatest width of the blade (which is at distal third) but over twice the length of the uniform marginal cilia of the fore wing. Hind tibial spur single. Caudal femur with numerous very short, stiff setæ dorsad.

From one female caught in forest, June 6, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2464*, Queensland Museum, Brisbane, the specimen on a slide with the preceding species.

Dedicated to Clerk Maxwell.

5. STETHYNIUM NOTATUM new species.

Female:—Length, 0.50 mm.

Much like *daltoni* but the abdomen bears four distinct cross-stripes of black, the first at base, the cuneate marking on each side of meson of scutum reaches three fourths the way to caudal margin (only about half way in *daltoni*) and there is a round black spot just caudad of each parapside (besides the more obscure, crescentic marking farther caudad and present in *daltoni*). Also the scape and pedicel are lemon yellow. Structurally differs in that funicle 2 is somewhat shorter being only a little longer than wide, 3 is quadrate (6 is globular and larger than 5 in both species); the fore wings are less slender (about 16 lines of discal cilia where broadest); the caudal wings with five or six lines of discal cilia which are uniformly distributed distad and they are broader than with *daltoni*. Compared with type of *daltoni*.

From four females which emerged May, 1914 from gall No. 31 (of H. Hacker).

Habitat: Brisbane, Queensland.

Type: No. *Hy 2465*, Queensland Museum, Brisbane, four females on a slide.

The species *lavoirsieri* bears a more or less distinct dusky band across abdomen somewhat proximad of middle while *daltoni* has a distinct cuneate marking on cephalic scutum on each side of the meson (cephalic half) and the cephalic end of each parapside is dusky. The types of *vesalii*, *curieri*, *lavoirsieri* and *mayeri* have been re-examined.

6. STETHYNIUM PERLATIPENNE new species.

Female:—Length, 0.90 mm.

Marked like *flavinotæ* but more robust, both wings very much broader, the fore wing bearing about forty-eight lines of discal cilia, the hind wings about eight.

Male:—Not known.

Described from two females reared with *flavinotæ*.

Habitat: Melbourne ?, Victoria.

Types: No. *Hy 2466*, Queensland Museum, Brisbane, the above specimens on a slide with the type female *flavinotæ*.

7. STETHYNIUM LATIPENNE Girault.

The pronotum, scutum excepting lateral and caudal margins and the median line more obscurely, the tegulæ, the cephalic third of each parapside and the abdomen are velvety

black. Differs from *flavinotæ* and *perlatipenne* in bearing distinctly longer marginal cilia on the fore wing.

The males of *Stethynium* may be distinguished from the males of *Paranaphoidea* by the characteristic shape of the fore wings and the arrangement of the longer marginal cilia. Otherwise, they are very much alike.

GENUS ANAPHOIDEA Girault.

1. ANAPHOIDEA GALTONI Girault.

Male:—Black, the wings hyaline, clouded along proximal half, the scape, pedicel and legs dusky brown, the antennæ otherwise black, the funicle joints a little over twice longer than wide. Same as the female.

From one male captured with the female type specimen.

GENUS ANAPHES Haliday.

1. ANAPHES MAZZININI new species.

Female:—Length, 0.50 mm.

In general like the North American *gracilis* and very similar to the Australian *kantii* from which it differs as follows: The head except vertex and all of thorax except cephalic third of scutum are golden yellow, the exceptions black or nearly; distal half of abdomen black. Club and caudal femur dusky; rest of legs and antennæ pale yellow. The fore wings are somewhat broader, their discal ciliation apparently absent but sparse and very faint—a long line along cephalic margin and scattered cilia in the cephalic half of the blade. The antennæ are similar in structure. Strigil present. The fore wings are a little broader than their longest marginal cilia (a little narrower in *kantii*).

Habitat: Capeville (Pentland), Queensland. Forest, December 26, 1912.

Type: No. *Hy 2467*, Queensland Museum, the female on a slide.

GENUS PARANAGRUS Perkins.

1. PARANAGRUS OPTABILIS Perkins.

Pasoerocan, Java. Associated with the eggs of *Dicranotropis vastatrix* Breddi on sugar-cane.

ANAGROIDEA new genus.

Female:—Like *Anagrus* Haliday but the scutellum is *preceded* by a sclerite which is nearly as long as itself, both wider than long, the antennæ inserted at the clypeus, the scape elongate, also funicle 1 and the club, the latter nearly as long as the funicle; no phragma; the abdomen depressed ovate, subpetiolate, the second segment occupying over a third of the surface, the ovipositor not exserted. Strigils present. Mandibles slender, bidentate. Fore wings as in *Anaphes* but their marginal cilia short. Caudal wings very broad, the blade shaped like an ordinary table-knife. Body with rather rough sculpture. Caudal tibial spurs double. Tarsi 4-jointed. Male antennæ filiform, 13-jointed. Black. With the habitus of certain scelionids.

Type: Eustochus dubius Girault.

1. ANAGROIDEA DUBIA (Girault).

Eustochus dubius Girault, first supplement, pp. 128-129.

The female is like the male except the 9-jointed antennæ as described in the foregoing. The vertex is finely transversely lined, the propodeum rugose. One specimen, Gordonvale (Cairns), Queensland, forest (2,600 feet), June, 1913. The type is a male, the type locality Gordonvale.

The genus *Anagroidea* is closely allied with *Clerunchus* Enock but that genus has the scutellum longer than wide, the male antennæ are apparently 12-jointed, the sculpture is not rough, the marginal vein is distinctly shorter, the fore wings are narrow and with very long marginal cilia and the hind wings are not enlarged. *Erythmelus* Enock (= *Enasius* Enock) is valid on thoracic structure. The phragma is present and the scutellum is preceded by a single rectangular sclerite at the meson and between the axillæ. In *Anagrus*, the scutellum is followed by a pair of sclerites and the phragma is present.

PARANTHEMUS new genus.

Male:—Characterised by the antennæ which are only 3-jointed, scape, pedicel and a long unjointed club bearing three conspicuous whorls of long stout setæ. Phragma present. Fore wings as in *Anthemus* Howard. Mandibles edentate, obliquely truncate at apex, the extreme apex acute. Pedicel long, stout but not half the length of the tapering club. Scutellum hemispherical, apparently a solid piece.

Female:—Not known.

Type: The following species.

1. PARANTHEMUS SPENCERI new species.

Male:—Length, 0.43 mm.

Pale golden yellow and resembling the common species of *Anagrus* in general appearance; cephalic third or less of scutum dusky blackish on each side of meson there being a short enneate area; fore wing lightly infuscated under the marginal vein, margin to margin, the longest marginal cilia about three fourths the greatest wing width. Discal cilia of the fore wings arranged in about seven lines, distinct, not dense. Hind wings narrow, with a single distinct line of discal cilia along the cephalic margin, the caudal marginal cilia much longer than the greatest width of the blade. Tarsi not especially long.

Female:—Not known.

Described from one male captured in jungle, February 4, 1914 (A. P. Dodd).

Habitat: Babinda, Queensland.

Type: No. *Hy 2468*, Queensland Museum, Brisbane, the specimen on a slide.

Dedicated to Herbert Spencer.

Tribe MYMARINI.

Genus POLYNEMA Haliday.

1. POLYNEMA POINCAREI Girault.

The distal band on fore wing covers the distal fourth of the wing rather than distal fifth.

A female was taken at Cooktown, Queensland, by sweeping in jungle, March 6, 1914 (A. P. Dodd). The head is polished. Pronotum as long as the scutum. Thorax smooth, the propodeum noncarinate. Scutellum without a cross-line of punctures before apex. Compared with type in balsam.

Male:—Like the female. Antennæ black, the pedicel short, yellow, the funicle joints 3-4 times longer than wide except the last two which are shorter, the last only one and a half times longer than wide, much shorter than the club joint which is subequal to the penultimate funicle joint. Pedicel subglobate.

Described from a male captured in a jungle pocket, April 2, 1914 at Gordonvale (Cairns), Queensland.

A. POLYNEMA POINCAREI NIGRITHORAX new variety.

Female:—Polished black; pronotum quadrate, subequal to scutum; scutellum longer

perfectly simple, no cross-line of foveæ before tip; propodeum perfectly plane, polished; no pubescence. Thorax jet black, also distal one or two funicle joints. Otherwise in color like the type forms. Petiole longer than the long hind coxæ.

Captured September 13, 1913 at Kuranda (A. P. Dodd).

Habitat: Kuranda, Queensland.

Type: No. *Hy 2469*, Queensland Museum, Brisbane, the above female on a slide.

2. POLYNEMA FRANKLINI Girault.

This species also differs from *rousseaui* in having no disto-cephalic spot on the fore wing.

3. POLYNEMA SAPPHO Girault.

The color of the legs given in the table of species is correct.

4. POLYNEMA LODGEI Girault.

Antea, first supplement, p. 123, fourth line from bottom *scond* read *second*.

5. POLYNEMA FRATER Girault.

The type is a male, the type locality Ingham, Queensland.

6. POLYNEMA ROMANESI Girault.

In the table of species (first supplement, p. 127), this species should be included within the group containing *draperi* and allies. It differs from *draperi* in its greater size and longer antennal joints. Thus, funicle 2 is only about twice the length of the pedicel in male *draperi*, plainly thrice its length in male *romanesi*. The tarsal joints are much longer. From *nordaui* female, *romanesi* differs in the greater slenderness as with *draperi* and the hind legs are wholly orange yellow. The first joint of caudal tarsus is distinctly less than half the length of the caudal tibia in *nordaui* (somewhat less so in *draperi*) but in *romanesi* it is about half the length of the caudal tibia or a little more. In *romanesi*, joint 1 of the caudal tarsus is distinctly longer than any of the funicle joints while in male *draperi* it is about as long as the longest joints of the funicle in that species. In female *nordaui* the tarsal joint is a little shorter than funicle joint 2. Types of the species named re-examined.

7. POLYNEMA WALLACEI new species.

Female:—Length, 2 mm.

Characterised by bearing on the fore wing longitudinally a large subovate fuscous marking which fills over the distal third of the blade and thus running to *lodgei* Girault from which it differs in that the longitudinal marking in that species is uniform and central, columnar; also in *lodgei* the club is short and stout while in this new species it is long and slender; in *lodgei*, also, the distal funicle joints are shorter. The wings are about the same otherwise. Antennæ black except the first three joints which together with the first two pairs of legs (except coxæ and a ring around first femur at base), the petiole except distal half and the hind tarsi, are chrome yellow. Hind legs somewhat darker. Funicle joint 6 over twice longer than wide, shortest, somewhat longer than the pedicel. Ovipositor just tipping the abdomen. In *lodgei* the fore wings are a little broader and funicle joint 6 is not twice longer than wide but subequal to the pedicel. Differs from *grotiusi* in being smaller, the nonexserted ovipositor, the different color and somewhat longer antennal club. First two or three abdominal segments long, the others transverse. Short carinæ inclose the propodeal spiracle. Cross-groove of scutellum finely punctate. Scutellum, pronotum, scutum, axillæ, parapsides (except laterad centrally) polished; vertex faintly sculptured; scutellum with indication of a median groove at base (a longer than wide fovea); abdomen polished. Propodeum with a distinct median carina, which forks at apex; its spiracle minute.

From two females captured in jungle, February 4, 1914 (A. P. Dodd).

Dedicated to A. R. Wallace.

Habitat: Babinda, Queensland.

Type: No. *Hy 2470*, Queensland Museum, Brisbane, one female on a slide with a female of *mendeli*.

8. POLYNEMA ALIGHERINI new species.

Female:—Length, 1 mm.

In my table of Australian species runs to *spenceri* and allies (*australiense* and *pax*) but differs from all of them in bearing distinctly shorter marginal fringes on the fore wing, the longest of these cilia being not a half of the greatest wing width but between a third and a half of that distance. Black, legs and antennæ pale golden yellow; club black; distal three funicle joints more or less dusky. Funicle 1 subelongate, distinctly longer than the pedicel, 2 longest, a third longer than 1, 3 a little shorter than 2; next three funicle joints each shortening, each widening distad, 6 a little shorter than 1 but longer than the pedicel. Ciliation of fore wing not disappearing proximad. Funicle 2 five times longer than wide. Joint 1 of hind tarsus somewhat longer than funicle 2, somewhat less than half the length of the hind tarsus. Compared with types of *pax*, *draperi*, *zangwilli*, *romanesi* and *nordaui*.

Male:—Not known.

Described from one female captured in jungle, April 13, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2471*, Queensland Museum, Brisbane, the specimen on a slide.

Dedicated to Dante Alighere.

9. POLYNEMA THOREAUINI new species.

Female:—Length, 1.50 mm., excluding ovipositor which is extruded for somewhat more than a fourth the length of the abdomen.

In my table runs to *australiense* and *pax* but may be separated at once because of the distinctly extruded ovipositor. The wings are more densely ciliated than in *australiense* and the funicle joints are longer. Closest to *pax* which has the ovipositor a little extruded but the antennæ are all black and also the legs (the tarsi and petiole of abdomen yellow); also the fore wings are slightly different and the discal ciliation is continued to the venation only by a single (sometimes paired) line of cilia.

Pronotum large, with a narrow median carina; parapsidal furrows distinct. Scutellum with a curved cross-line of pin-punctures, the thorax with rather coarse longitudinal reticulation. Segment 3 of abdomen large, occupying nearly a third of the surface, 2 a third shorter than it, 4 transverse. Propodeum and abdomen practically without sculpture, the former without carinæ. Compared with slide type of *australiense* and *pax*.

From one female captured by sweeping forest uplands, May 28, 1914 (A. P. Dodd).

Habitat: Maclean, Clarence River, New South Wales.

Type: No. *Hy 2472*, Queensland Museum, Brisbane, the female on a slide with type of *Gonatocerus humboldti* (Girault).

Dedicated to Henry David Thoreau.

10. POLYNEMA HEGELI new species.

Male:—Length, 1.80 mm.

Shining; pronotum longer than the scutum, its lateral margin carinated, with a distinct neck. Parapsidal furrows complete. Scutellum plane, flat, the axillæ very small, the

postscutellum barely separated by sutures, very small, transverse; propodeum not well differentiated from the plane scutellum, not much inclined, smooth, noncarinate, nonsulcate, but its lateral margin very distinctly carinated or rimmed. Propodeal spiracle minute, round, cephalad. A long seta from each side of base of abdominal petiole on propodeum; and a somewhat shorter one on each side of meson of pronotum just before its caudal margin and one from each latero-caudal angle. Scutellum and scutum wholly naked. A short seta from center of each axilla. Head, thorax, legs, pedicel and abdominal petiole dark red brown; rest black.

Differs from *poincarei* as follows: In the second band of the fore wing which has the caudal margin deeply notched the whole forming a V; in *poincarei*, the caudal margin is straight. The two arms of the V thus formed are unequal, the longer being the cephalic. Also, the whole stripe is shorter, plainly shorter than the space between the stripes, not subequal to it as in *poincarei*. Nearly the distal half of the linear hind wings is dusky in both species.

Differs from the description of the male of *poincarei* in that (the club is somewhat shorter than funicle 1) funicles 2-8 are each about seven times longer than wide, 1 about five times longer than wide. The pedicel is somewhat longer than wide. The wing pattern is also different. Compared with female type of *poincarei*.

Described from one male caught in jungle, August 2, 1914 (A. P. Dodd).

Habitat: Harvey's Creek (Cairns), Queensland.

Type: No. *Hy 3473*, Queensland Museum, Brisbane, the specimen on a slide.

Dedicated to G. W. F. Hegel.

In describing forms in this family it is necessary to examine the thoracic structure and the sculpture since species may differ in this alone. Also, the thorax will have to be used largely in the classification of this group and I have already applied it in the case of *Anagrus* and allied genera. Special notice should be taken of those sclerites following the scutum.

CORRECTION.[1]

Page 115, first supplement, volume II, line 9, *peregrinium* read *peregrinum*.

COLLECTION, PRESERVATION AND DESCRIPTION OF MYMARIDAE.

The fragile and delicate insects of this family may be collected by rearing, by sweeping and by scanning windows. The last two yield the largest number of specimens and species but the first is of importance because of the additional data obtained. Immediately after collected, the specimens should be killed by immersion in alcohol and preserved in this medium (about fifty per cent. with water) until they are to be studied when after preparing the balsam mount, they may be removed by means of a camel's hair brush to a clean slide, fixed in suitable positions for studying the thorax and sculpture while still wet and as the uppermost parts dry off, placed quickly upon the stage of the microscope and the desired notes made. By adding dilute alcohol from time to time at this stage, a more or less leisurely study may be made of the entire dorsal surface (the forms without a phragma may be allowed to dry out completely). As these procedures are to prevent shrivelling, after the notes have been made, the specimen should be allowed to dry long enough for all of the surface fluid to become evaporated and then with the aid of a needle or pin dipped in balsam, rapidly transferred to the prepared slide, immersed in the xylol-balsam and covered in the usual way. If necessary, clearing may be accomplished by heating until the xylol-balsam boils gently. These simple methods are

[1] For additions *see* supplement to Part V and Part XV.

all that I have found necessary or desirable in studying the Mymaridæ. They have been used with success with the Trichogrammatidæ. Forms of the latter should never be allowed to dry and color descriptions preferably should be made before mounting in balsam. This applies to the delicate phragma-bearing Mymaridæ as well.

Trichogrammatidæ are collected in the same manner as described for the Mymaridæ. When clearing with heat, it is best in all cases to make the application as gentle as suffices; with the Trichogrammatidæ, it is necessary to remove the head and mount it under a cover of its own so that pressure can be applied to the antennæ.

The following Mymaridæ are common in their habitats: *Alaptus globosicornis, australiensis, Dicopus psyche, Gonatocerus comptei, G. cingulatus, Anagrus armatus, Paranagrus perforator, Stethynium lavoirsieri, S. cuvieri, S. vesalii, Camptoptera gregi* and *Polynema poincarei.* "Common" means "frequently met with."

LITERATURE REFERRED TO.

1909. Girault, A. A. Annals Ent. Society of America, II, pp. 22-29.

AUSTRALIAN HYMENOPTERA CHALCIDOIDEA—III.

SECOND SUPPLEMENT.

By A. A. Girault.

Family ELASMIDÆ.[1]

The same magnification. *See* these Memoirs, II.

Genus ELASMUS Westwood.

All the Australian species in this genus seen by me bear two ring-joints and a 3-jointed club, the antennæ 10-jointed.

1. ELASMUS HISPIDISCUTUM new species. Female.

Similar to *kurandaensis* except that the conical prolongation of the green of the scutum does not reach the scutellum. Mandibles 5-dentate in both species. From caudal aspect, the yellow of the vertex invades the metallic upper half of the occiput, appearing like a spot on each side. The fore wings are infuscated in both species but no distinct pattern is formed; however, the infuscation is longitudinal and under distal half or more of the marginal vein in *kurandaensis* (and broader), in this species along distal third or less of the same vein. In this species the lateral extremity of the green of scutum is obtuse or flat, in *kurandaensis* acute or subacute. Pronotum metallic at cephalic margin in both species. Flagellum brown black; funicle 1 longest, somewhat over twice longer than wide, twice the length of the pedicel; joints 2 and 3 subequal, somewhat shorter than 1; club 1 much the longest, slightly shorter than funicle 3. Scutum hispid.

Habitat: Gordonvale (Cairns), Queensland. Forest. July.

Type: No. *Hy 2720*, Queensland Museum, Brisbane. Tag and slide.

2. ELASMUS PUNCTATICAPUT new species. Female.

Length, 2.50 mm. Dark æneous green, the head tinged with purplish, the postscutellum lemon yellow, the legs pale except last two pairs of coxæ and middle of intermediate and caudal femora broadly which are dark metallic. Abdomen orange yellow, with a rather broad metallic green stripe across base, the distal fifth darker metallic (dorsad) and this portion immediately preceded by two transverse metallic stripes which are preceded by two marginal spots (a total of four spots), the stripes and spots nearly filling the orange portion of the abdomen. Fore wings distinctly infuscated but no pattern or distinct stripes, the infumation longitudinally under the distal half of the venation. Scutellum finely scaly, naked or only with several large setæ, the scutum the same but densely hairy. Head with rather dense thimble punctures above (vertex and dorsal face). Antennæ brown, the second ring-joint large; funicle joints all much longer than wide, 1 slightly the longest, twice longer than wide, distinctly longer than the pedicel. Mandibles 8-dentate. A yellow marking cephalad of the tegula as in *divinus*.

Habitat: Gordonvale (Cairns), Queensland. Jungle along forest streamlet. June.

Type: No. *Hy 2721*, Queensland Museum, Brisbane. Tag and slide.

[1] For additions, *see* Part XIV.

3. ELASMUS AURATISCUTELLUM new species. Female.

Length, 2.60 mm. Dark purplish green, the scutellum, mesopleurum and abdomen except a rather broad stripe across base, a little over distal fifth and a distinct round spot at lateral margin dorsad near middle, deep orange yellow. Postscutellum lemon yellow. Legs pale yellow except dorsal aspect of hind coxæ which are, as the abdominal markings, concolorous with the body. Antennæ black, the scape orange yellow except above, the pedicel elongate, nearly as long as the third funicle joint which is twice longer than wide and somewhat shorter than funicle 1; club missing; first ring-joint very short, the second large, approaching to quadrate. Mandibles 7-dentate. Fore wings distinctly embrowned but subhyaline caudo-distad, the distal margin of the brown leaving the end of the venation and running obliquely proximad to caudal margin. Scutum hispid, scutellum bare but with the usual four long setæ disposed at the corners of a square, together with the postscutellum and propodeum shining yet distinctly polygonally reticulated, the areas small, the lines not raised. Propodeum plane, noncarinate.

Habitat: Gordonvale (Cairns), Queensland. Forest. November 28, 1913.

Type: No. *Hy 2722*, Queensland Museum, Brisbane. Tag and slide.

4. ELASMUS DODDI Girault.

A female of this species was captured in the forest, December 10, 1913 and May 4, 1914 at Gordonvale. The mandibles are 6-dentate. Funicle 1 is longest, distinctly longer than wide, a little longer than the pedicel. The apical margin of scutellum is also narrowly yellow, the pronotum black.

5. ELASMUS QUEENSLANDICUS Girault.

The mandibles are 6-dentate, the fore wings indefinitely stained, the abdomen at apex not colored. One female, Gordonvale, edge of jungle, April, 1913 and one female from forest, May 23, 1914. Type re-examined.

A female captured August 20 in open jungle bore a distinct dot on mesopleurum a little above the middle coxa. Type locality.

6. ELASMUS MUSCOIDES new species.

Female:—Length, 2 mm.

Very similar to *ignorabilis* Girault but there are not two distinct cross-stripes of orange across dorsum of abdomen, the latter wholly black with faintly indicated (three) narrow orange yellow stripes on *proximal* half. The legs are wholly pale yellow except dorsal edge of hind femur. Postscutellum lemon yellow in both species. In this species only the proximal three fourths of venter of abdomen is orange yellow. Head punctate in both species. Abdomen somewhat as in *divinus* but that species differs in color. Antennæ missing. Mandibles 7-dentate (in *ignorabilis* about 12-dentate the teeth very fine). Caudal coxa laterad all metallic except distal end. Type of *ignorabilis* re-examined.

Described from one female labelled "Brisbane 10.8.13. H. Hacker."

Habitat: Brisbane, Queensland.

Type: No. *Hy 2723*, Queensland Museum, Brisbane, the specimen on a tag.

7. ELASMUS PAPILIO new species.

Female:—Length, 1.90 mm.

Similar to *maculatipennis* but the portion of the face just above antennæ is also yellow (ventral half of face yellow), the scutellum is margined all around with lemon yellow while the posterior coxa is like that of *maculatipennis biguttatus*. Also the marking on the fore wing involves only the base of the postmarginal vein, is thus farther proximad

and does not form an oblique stripe but is an indefinite blotch. Funicle 2 longer than 3, slightly shorter than 1. Mandibles 5-dentate. None of the four marginal dots on abdomen are joined transversely, the first a dot, the others wider than long. Tegulæ yellowish.

Described from one female captured in forest, August 9, 1913.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2724*, Queensland Museum, Brisbane, the specimen on a tag.

A second female same place a year later; the propleurum was wholly yellow.

8. ELASMUS TRIFASCIATIVENTRIS new species.

Female:—Length, 2 mm.

Very similar to *punctaticaput* Girault, the head punctate but the two marginal spots on abdomen are absent, the first cross-stripe of the distal two is half or less the length of the second (subequal in the other species), the mandibles are 12-dentate. The hind and middle femora are black in both species. Funicle 1 somewhat longer than 2 or 3, one and a half times longer than wide, much longer than the pedicel, the club joints 1 and 2 quadrate. Scape pallid. Fore wings obscurely infuscated distad of venation. Scutum entirely green.

Described from one female caught January 5, 1913 (A. P. Dodd).

Habitat: Kuranda, Queensland.

Type: No. *Hy 2725*, Queensland Museum, Brisbane, the specimen on a tag.

9. ELASMUS MARGISCUTELLUM Girault.

One female, forest, Gordonvale, August 13, 1913.

The tibiæ are pale yellow; the yellow distal margin of scutellum was interrupted at meson in this specimen, distal fourth (or nearly) of abdomen dark metallic green, preceded by three pairs of marginal spots. Distal half of cephalic femur pale. Head punctate.

10. ELASMUS DUBIUS new species.

Female:—Length, 1.85 mm.

Same as *cyaneus* but dark metallic green, the legs very dark brown, the postscutellum lemon yellow; cephalic knees and tibiæ pale yellow; mandibles 6-dentate. Antennæ not seen. Scutellum with the usual several bristles. Fore wings lightly dusky throughout.

From one female caught in forest, January 8, 1914.

Habitat: Capeville (Pentland), Queensland.

Type: No. *Hy 2726*, Queensland Museum, Brisbane, the specimen on a tag.

11. ELASMUS PICTURATUS new species.

Similar to *uniguttatus* Girault but there is a rather broad stripe across the base of the abdomen, the metallic coloration on the pronotum continues back to the scutum, the propodeum is wholly dark metallic green (not merely broadly down the meson) and most of the upper edge of hind coxa distad similarly colored and with a metallic spot cephalad near base (dorsal aspect; only a basal dot present in the other species). The fore wings are slightly, suffusedly infuscated. Both species bear a metallic rather broad cross-stripe at upper half of occiput this joining centrally the black area on the vertex. Antennæ and mandibles similar. Funicle joints decreasing slightly in length distad, 1 being one and a half times longer than its width, distinctly longer than the short pedicel. Large metallic area of mesopleurum narrowly joined to the tegula (isolated in the other species). Types compared.

From one female caught by sweeping along forest streamlet bordered with jungle, May 6, 1913.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2727*, Queensland Museum, Brisbane, the specimen on a tag.

12. ELASMUS PICTUS new species.

Female:—Length, 2 mm.

Similar to *nigriscutellum* Girault but the black spot on vertex is isolated from the eyes, the ochreous yellow uniform and the tip of the abdomen broadly dark metallic green (distal third or not quite). Otherwise similar. Mandibles 5-dentate. Meson of propodeum, the area around the spiracle and center of dorsal edge of hind coxa dark metallic. Occiput yellow dorso-laterad. Cephalic margin of pronotum at meson metallic green.

From one female caught with *picturatus*.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2728*, Queensland Museum, Brisbane, the specimen on a tag.

13. ELASMUS HAECKELI new species.

Female:—Length, 2 mm.

Lemon yellow, the abdomen orange yellow, the legs pale yellow except dorsal edge (but not at base) of hind coxa which is metallic green. Upper half of occiput except extreme dorso-lateral corner; center of vertex; pronotum except caudo-lateral corner; scutum except two yellow eye-like spots caudo-laterad each just cephalad of the axillæ; each parapside except caudad, the caudal yellow portion forming a large suboval yellow spot just laterad of the one on the scutum and narrowly separated from it (thus four spots in pairs, transversely, cephalad of scutellum); propodeum, a tolerably broad stripe across base of abdomen, extreme tip of abdomen and a narrower stripe just cephalad; and a large, non-isolated rounded area in center of mesopleurum, metallic dark green tinged with purplish. The yellow base of dorsal edge of hind coxa appears to be a lateral yellow part of the propodeum from dorsal aspect. Fore wing with a stain under the distal third of marginal vein, the area rectangular, not very distinct. Scape yellow, metallic along much of dorsal edge; rest of antenna brown; second ring-joint large; funicle joints long, 1 longest, twice longer than wide, the other two shortening somewhat in succession, club 1 distinctly longer than club 2, longer than the pedicel, subequal to funicle 3. Mandibles 5-dentate.

From one female caught in forest pocket, September 12, 1913 (A. P. Dodd).

Habitat: Kuranda, Queensland.

Type: No. *Hy 2729*, Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

14. ELASMUS UNGUTTATIVENTRIS new species.

Female:—Length, 2.40 mm.

Very dark metallic green, the head punctate, the postscutellum lemon yellow, the legs white or nearly, the dorsal edge of hind coxæ concolorous. Abdomen orange yellow, with a rather broad metallic green stripe across immediate base and a rounded spot just before tip as in *uniguttata*. Wings subhyaline. Tip of abdomen concolorous with rest of abdomen, tip of valves of ovipositor black. Scutum hispid. Scutellum finely scaly, with only the few long setæ. Scape pale, rest of antennæ brown; funicle joints 2 and 3 subequal, a little shorter than 1 which is longer than the pedicel and about one and three fourths times longer than wide. Mandibles apparently 4 or 5-dentate, not very plainly seen.

From one female caught by sweeping along forest streamlet, June 14, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2730*, Queensland Museum, Brisbane, the specimen on a tag.

15. ELASMUS FLAVINOTUS new species.

Female:—Length, 2.65 mm.

Exactly similar to *punctaticaput* Girault but the color is darker; base of cephalic coxa metallic, fore wings hyaline, base of abdomen somewhat less broadly green, the two

marginal spots wider than long not round; also the mandibles are only 6-dentate. Differing notably in the distinctly shorter funicle joints of which 1 is somewhat longer than wide, subequal to the pedicel, longest, 3 being a little longer than wide. Scape white. Both species bear a transverse yellow marking just across, and cephalad of, the tegula as in *divinus*.

From one female captured in forest, April 3, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2731*, Queensland Museum, Brisbane, the specimen on a tag, head on a slide.

16. ELASMUS STELLATUS Girault.

Lemon yellow, the abdomen orange yellow; marked with black as in *nigriscutellum* except that the short lateral extension of the central black of vertex does not reach the eyes, the scutellum is margined (except at base) with yellow, very narrowly around apex; distal half of dorsal edge of hind coxa and a dot at base of dorsal edge black. Abdomen the same but near tip with a small round black spot at meson as in *uniguttatus*. Occiput with a rather narrow black *looped* stripe across at dorsal third, eye to eye. Extreme cephalic apex of neck of pronotum black. Tip of valves of ovipositor black but not of abdomen.

Allied with *uniguttatus* but may be distinguished at once by having the scutellum mostly black and the apex of pronotum more narrowly so. The minute black dot on each margin of scutum absent, only visible on one side in the type. Funicles 2 and 3 subequal, a little shorter than 1 which is over twice longer than wide.

In the type, the scutum was ochreous and quite as described for *nigriscutellum*.

A female captured in forest, April 12, 1914, Gordonvale. Compared with type.

17. ELASMUS MURWILLUMBAHENSIS new species.

Female:—Length, 2 mm.

Dark metallic green, the postscutellum lemon yellow, the legs white except dorsal third of caudal coxa, the abdomen orange yellow except rather broadly at tip (dorsad and ventrad), dorsad a cross-stripe preceding the apical metallic coloration; also a rather broad metallic green stripe across base of abdomen followed by a triangular marginal spot. Tegulæ lemon yellow. The pair of marginal spots on abdomen are closer to the proximal green than to the cross-stripe. The distal green dorsad of abdomen occupies about distal fourth. Caudal wings very broad. Fore wings distinctly infuscated indefinitely from the minute stigmal vein. Pedicel subequal to funicle 3 which is shortest, a little longer than wide, 1 longest, one and two thirds times longer than wide. Mandibles about 15-dentate. Scape white, dusky above at tip, rest of anteuna black. Head punctate. Thorax clothed usually.

Described from one female caught by miscellaneous sweeping, May 11, 1914 (A. P. Dodd).

Habitat: Murwillumbah, New South Wales.

Type: No. *Hy 2732*, Queensland Museum, Brisbane, the specimen on a tag.

18. ELASMUS CONSUMMATUS new species.

Female:—Length, 2.20 mm.

Orange yellow, the following parts very dark metallic green or black: Head, middle coxa above at base, neck of pronotum, axillæ, a small marginal spot on each side of abdomen at base, a larger one at apex of proximal third, not quite distal fourth of abdomen (somewhat less ventrad), prepectus, mesopleurum, proximal, dorsal half of caudal coxa, and dorsal edge of caudal femur. Mandibles 6-dentate. Funicle 1 distinctly longer than the pedicel which is rather long; scape yellow, flagellum black; funicle 1 two and a half times

longer than wide, 2 a little shorter. Head punctate. Scutellum nearly naked, scutum hispid, postscutellum lemon yellow. Propodeum black. Wings wholly, lightly infuscated, clear distad of postmarginal vein. Hind wings hyaline. Hind tibiæ with the usual pattern.

From one female caught by sweeping jungle (?), June 3, 1914 (A. P. Dodd).

Habitat: Grafton, New South Wales.

Type: No. *Hy 2733*, Queensland Museum, Brisbane, the specimen on a tag.

19. ELASMUS FICTUS new species.

Female:—Length, 1.75 mm.

Like *uniguttatus* but at once differing in lacking the large black spot on mesopleurum, the black on propodeum and the proximal (dorsal) fourth of caudal coxa is black except caudad; from *picturatus* differs markedly in lacking the basal stripe across dorsal abdomen, the black on pronotum and the large area on mesopleurum. Tip of abdomen, axillæ, tegulæ, the round spot on abdomen near tip, ocellar area and a black area on occiput from the eyes on each side (not forming a cross-stripe) are black or dark metallic green. These are all the markings except the caudal coxa as noted. In *uniguttatus* the tip of the abdomen is not black. Head with scattered rather small punctures. Hind tibiæ with the usual pattern. Wings subhyaline. Scape yellow, flagellum black. Funicle joints subequal to each other and the pedicel, about a third longer than wide. Mandibles 5-dentate. Scutellum scaly, naked (except for the few large isolated setæ).

From one female caught sweeping forest uplands, May 3, 1914 (A. P. Dodd).

Habitat: Maclean, Clarence River, New South Wales.

Type: No. *Hy 2734*, Queensland Museum, Brisbane, the specimen on a tag with type *uniguttatus*.

20. ELASMUS FLAVIOS new species.

Female:—Length, 1.80 mm.

Similar to *ignorabilis* but at least two thirds of the caudal coxæ are metallic (only about the dorsal third in that species), the two stripes across the abdomen are not so distinct, darker orange and closer together, about across the middle, the metallic coloration of dorsum of abdomen between the stripes does not invade the lateral aspect as distinctly so in *ignorabilis*; there is a yellow dot just mesad of tegula and the oral area up to antennal insertion is lemon yellow. Otherwise colored the same or nearly. Scutellum finely reticulated. Scutum hispid, head punctate as usual. Scape white, dusky dorsad; flagellum black. Pedicel shorter than any funicle joint. Funicle joints subequal, each somewhat longer than wide, 1 slightly longer than the other two; all are stout. Mandibles 7-dentate. Wings hyaline in both species. Compared with type of *ignorabilis*.

From one female caught in forest, May 2, 1914 (A. P. Dodd).

Habitat: Tweed Heads (Tweed River), New South Wales.

Type: No. *Hy 2735*, Queensland Museum, Brisbane, the specimen on a tag with type of *ignorabilis*.

Differs most notably from *muscoides* in having the yellow oral area and the yellow dot just mesad of tegula.

21. ELASMUS FASCIATIPES new species.

Female:—Length, 2.10 mm.

Dark metallic green, the abdomen orange yellow, a little over distal third of abdomen, a broad stripe across base and three cross-stripes between them, equally distributed, very dark metallic. Postscutellum lemon yellow. Coxæ dark metallic except distal third of last two pairs. Legs otherwise white except dorsal edge of last two pairs of femora and a

narrow black stripe across at distal two thirds of each, that of the hind femur interrupted very broadly centrally. Funicle 1 somewhat longer than wide, 3 a little longer than wide, longer than the pedicel. Sculpture and clothing as usual. Wings hyaline. Mandibles 7-dentate.

From one female caught in forest, August 2, 1914 (A. P. Dodd).

Habitat: Gordonvale, Queensland.

Type: No. *Hy 2736*, Queensland Museum, Brisbane, the specimen on a tag.

22. ELASMUS BIGUTTATUS Girault.

Raised to specific rank from *maculatipennis*. The scutellum is as in *splendidus* and the hind coxa is metallic only in middle of dorsal edge thinly. In this species and *maculatipennis*, there is an occipital yellow spot on vertex as in *splendidus* and the propleurum is more or less (sometimes wholly) lemon yellow joined to the yellow spot of pronotum. In *biguttatus*, there are two marginal dots out from the proximal stripe on abdomen. In a variety captured in the type locality, December 18, 1912, there was only the first and this very small. This variety is united with the type of *biguttatus* and is named *binotatus* new variety. It differs also from the typical form in having the entire dorsal margin of hind coxa broadly metallic green and the vertex wholly concolorous.

23. ELASMUS PULEXOIDES new species.

Female:—Exactly similar to *trifasciativentris* but the mandibles 6-dentate, the cephalic femora black along proximal half and the abdomen has three stripes between the proximal and distal metallic portions, the third stripe not as broad as the corresponding one in the other species yet broader than the other two. The first and second stripes are farther from each other than the second and third are from each other; the third is concaved at meson of its proximal margin. The metallic distal part is longer here and very faintly divided by orange at its proximal fourth forming an indistinct fourth stripe. Funicle joints a little longer than the pedicel, each somewhat longer than wide. Wings hyaline in both species or practically so.

From one female caught in jungle, August 20, 1914.

Habitat: Gordonvale, Queensland.

Type: No. *Hy 2737*, Queensland Museum, Brisbane, the specimen on a tag.

24. ELASMUS DIVINUS Girault.

In the original description, *antea*, p. 134, line 10, *proximal* read *distal*; line 11, after *and* insert *proximal half of hind*.

25. ELASMUS ACUMINATUS new species.

Female:—Length, 2.60 mm. Abdomen pointed conical, two thirds longer than the thorax

Very dark metallic green, the abdomen black, metallic blue at base. Legs and scape white; proximal (dorsal) fourth of hind coxa, dorsal edge of hind femur and ventral edge of same at distal third, black. Abdomen reddish yellow along meson of venter for proximal two thirds. Distal edge of mesopostscutellum lemon yellow. Fore wings indefinitely, lightly infuscated along apex of venation. Mandibles 6-dentate. Otherwise as in *lividus* (in *lividus*, the cephalic coxæ are white except at base). Funicle joints long and subequal, about twice longer than wide or nearly, each longer than the pedicel. Club joints each a little shorter in succession, the first somewhat shorter than any funicle joint.

From one female caught in jungle, June 3, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2738*, Queensland Museum, Brisbane, the specimen on a tag.

GENUS EURYISCHIA Kocbele.

This genus is accredited to Riley by de Dalla Torre (1898) and others with the remark that it was not described. Later, Kocbele figured the type species (*lestophoni*) which was apparently named by Howard. Hence *Euryischia lestophoni* Howard a *nomen nudum* becomes *Euryischia lestophoni* Kocbele. The genus not becoming valid until its genotype was described must be accredited to Kocbele (1890). There are two ring-joints in the antennæ.

1. EURYISCHIA SHAKESPEAREI Girault.

This species differs from *melancholica* Girault in the bearing of a longitudinal patch of discal cilia under the distal half and base of the submarginal vein separated from the rest of the cilia by an oblique hairless line; in having but three long bristles from the break of the same veiu (in *melancholica* there are two in a row longitudinally, two on the spur of the submarginal vein besides three small setæ of which two are on the vein spur, one isolated on the blade); and in the characteristic infuscation of the fore wing. It is also less robust, the pedicel longer. There are two ring-joints. Head sculptured like the thorax. Types of both species re-examined. Mr. G. F. Hill has sent me several females from Port Darwin, Northern Territory, labelled "No. 30, Oct. 10, 1913" and one male, five females, same data and "No. 24. From same species of coccid as No. 15." The male is like the female.

The species was reared with *Aneristus fumosipennis* G. and D.

2. EURYISCHIA UNFASCIATIPENNIS new species.

Female:—Length, 1.30 mm.

Dark metallic blue, the wings clear but with a distinct sooty cross-stripe nearly as in *inopinata* Masi except that the stripe is broader being from all of the marginal and stigmal veins (and slightly distad of the latter, its proximal margin straight but oblique and coterminous with the discal ciliation, the distal margin convex); bristles as in *inopinata*. Thorax and abdomen finely scaly, the abdomen conic-ovate, somewhat longer than the rest of the body. Scutum with sparse bristles, the scutellum with only about four of them. Propodeum sculptured like the rest of the thorax (finely lined). Mandibles bidentate, the second tooth truncate. Club whitish; pedicel much longer than any of the funicle joints, twice the length of 3 which is quadrate, 1 shortest, a little wider than long, 2 longest, somewhat longer than wide, 3 widest, next longest; proximal club joint longest. Second ring-joint partly hidden. Antennæ inserted just below the ventral ends of the eyes. Head finely reticulated like the thorax. Knees, tibiæ and proximal three tarsal joints white. Hind tibial spur single; hind coxa long and *conical*, not flat and circular as in *sumneri*, *nigra* and *melancholica*.

Male:—Not known.

Described from one female captured by sweeping in forest, December 10, 1913.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2740*, Queensland Museum, Brisbane, the specimen on a tag, the head and hind leg on a slide.

3. EURYISCHIA UNMACULATA new species. Female.

Length, 1.40 mm. Like *unmaculatipennis* Girault but the round fuscous spot against the stigmal vein is somewhat larger, the fore wings are narrower, the first funicle joint is a little longer than wide and the mandibles are bidentate, the second tooth truncate, not with three distinct teeth as in the other species. The coxæ in both species are as in *Elasmus*. Head finely circularly striate. Wing bristles as in *inopinata* Masi. Fore wings somewhat infuscated distad of venation to apex. Scutum densely hairy, the scutellum nearly naked. Distal two funicle joints wider than long.

Habitat: Gordonvale (Cairns), Queensland. Forest. November 1, 1913.

Type: No. *Hy 2741*, Queensland Museum, Brisbane. Tag and slide.

Genus EURYISCHOMYIA Girault.

Like *Euryischia* but the parapsidal furrows are complete; the hind coxæ are enlarged but cylindrical ovate as in some species of *Euryischia*. Tarsi 5-jointed. The male is similar but with an obtuse abdomen.

1. EURYISCHOMYIA WASHINGTONI Girault. Female, male. Genotype.

Length, 1 mm. Slender, the abdomen conic-ovate.

Very dark metallic green; legs (except caudal coxæ and femora) and tegulæ pale lemon yellow. Fore wings with a clearly delimited, broad, jet black band across them under the marginal and most of postmarginal veins, its distal margin just reaching apex of stigmal vein, its proximal margin nearly straight. Wings hyaline. Scutum with hardly more setæ than the scutellum which is nearly naked, the sparse setæ whitish. Thorax finely scaly. Mandibles bidentate, the second tooth broadly truncate. Two ring-joints, the three funicle joints subquadrate. Not more than two bristles under submarginal vein. Hind femur compressed. The male is similar. Outer angle of second tooth of mandible acute.

One female was captured by sweeping in forest, Townsville, January 19, 1913. The type locality is Pentland (January 8, 1913).

Habitat: Capeville (Pentland) and Townsville, Queensland. Forest.

Type: No. *Hy 2742*, Queensland Museum, Brisbane.

2. EURYISCHOMYIA FLAVITHORAX new species of Girault and A. P. Dodd.

Female:—Length, 1.40 mm.

Abdomen jet black; thorax deep orange yellow except most of the short black pronotum which is lemon yellow at lateral angles and the postscutellum and propodeum which are transverse and lemon yellow, the suture between them black. Head lemon yellow as are also the legs and antennæ and thoracic pleura. Hind coxæ blackish. Thorax finely reticulated. Wings hyaline. Mandibles tridentate, the third tooth really a truncation from the second which forms the acute inner angle of the apex. Postmarginal vein somewhat longer than the stigmal. Somewhat similar to *saintpierrei* Girault. Funicle 3 largest, all wider than long. Obscure white marginal spots on base of abdomen.

Male:—Not known.

Described from three females taken by sweeping forest, December 1 and 3, 1913 (A.A.G.).

Habitat: Gordonvale (Cairns), Queensland.

Types: No. *Hy 2744*, Queensland Museum, Brisbane, one female on a tag, the head, a hind tibia and another female on a slide.

On March 2, 1914 a female was captured at Cooktown in forest (A. P. Dodd).

3. EURYISCHOMYIA SAINTPIERREI new species.

Female:—Length, 1.30 mm.

Running to *Anysis* Howard in the Eunotinæ but the antennæ clavate and 10-jointed with two ring-joints, the club 3-jointed; scutellum flat and hardly differentiated from the propodeum, not as long as the scutum which bears complete parapsidal furrows. Wings as in *Euryischia* of the Elasmidæ but the large bristles absent; hind coxæ enlarged but cylindrical. Second abdominal segment (dorsad) hardly as long as the others, not a fifth of the surface, the abdomen short and stout. Hind tibiæ with stiff bristles dorsad, the femora stout. Wings hyaline. Propodeum apparently without carinæ. Pedicel subelongate.

Abdomen black, thorax and head yellowish brown, the propodeum black; legs brownish black, the knees, tibiæ and tarsi lemon yellow; antennæ brownish yellow, the three funicle

joints much wider than long, the first shorter and narrower but much larger than the ring-joint. Mandibles tridentate, weak.

Male:—Unknown.

From one specimen from the Queensland Museum, unlabelled.

Habitat: Brisbane, Queensland.

Type: No. *Hy 2743*, Queensland Museum, Brisbane, the above specimen on a tag, the head and hind legs on a slide.

All yellow species of *Elasmus* have the peculiar arrangement of black spines on the caudal tibiæ; the arrangement does not seem to differ specifically. The variation in the mandibles is a good specific character and species may differ only in this. Species of *Elasmus* and *Euryischia* do not shrivel upon drying but the head (which is punctate in all of my species of *Elasmus*) must be removed and crushed in balsam in order to see the mandibles.

The following species of the family appear to be common in their respective habitats: *Elasmus splendidus, formosus, queenslandicus* and *margiscutellum; Euryischia shakespearei* and *Euryischomyia washingtoni.*

ADDITIONAL STATEMENT ON MYMARIDAE.

The following new species was described just too late to be included within the second supplement to this family:

GENUS PARANAPHOIDEA Girault.

1. PARANAPHOIDEA NIGRICLAVA new species.

Female:—Length, 0.92 mm. Ovipositor only slightly extruded.

Jet, the antennæ except the club and the legs, except hind coxæ and femora, pale whitish yellow; postscutellum contrasting brilliant golden. Fore wings hyaline but distinctly infuscated from base out about to end of marginal vein, the stigmal vein as in *Stethynium.* Scutum with a distinct median groove, the postscutellum with three, one median. Thorax not rudely sculptured, smooth or nearly. Fore wings with about eighteen lines of cilia where widest, rather slender, rounded at apex, the discal ciliation disappearing some distance distad of venation (over length of marginal vein distad), the longest marginal cilia only a third the greatest wing width. Club of antenna contrasting in color with the funicle (much more so than with *caudata*). Funicles 1-3 and 5 narrower than the other two, 2 and 3 subequal, each a little longer than wide, 1 subquadrate, 5 slightly longer and wider than 2; funicle 4 subequal to 6, longest, somewhat longer than wide, subequal in length to the pedicel. Venation dusky black. Club divided about the middle. Hind wings with only a paired line of discal cilia along each margin, their caudal marginal cilia somewhat longer than the greatest width of the blade and a little longer than the longest marginal cilia of the fore wing. Club rather large. Hind tibial spur single, not especially long.

From one female caught in forest, June, 1914 (A. P. Dodd).

Habitat: Burnett Heads, Southern Queensland.

Type: No. *Hy 2739*, Queensland Museum, Brisbane, the specimen on a slide.

In this genus, the axillæ are normal, scutellum wider than long, shorter than the postscutellum.

These observations should be added:

Enasius Enock differs from *Erythmelus* Enock in having all the funicle joints much longer than wide and the scape longer and more slender. The groups must be considered valid until shown to the contrary. They differ in thoracic structures from allied genera, a fact overlooked in their original descriptions.

Of the Australian species of *Anaphes*, as a consequence of the recognition of the Enockian genera, *wallacei, lapacei* and *spinozai* are *Enasius; kantii, mazzinii* and *painei* are *Erythmelus.* The sole species of *Anaphes* is thus *saintpierrei.*

AUSTRALIAN HYMENOPTERA CHALCIDOIDEA—IV.

SUPPLEMENT.[1]

By A. A. Girault.

Magnification as previously. *See* these Memoirs, II, pp. 140-296.

Family EULOPHIDÆ.

Subfamily ENTEDONINÆ.

Tribe ENTEDONINI.

Genus PLEUROTROPOPSEUS Girault.

1. PLEUROTROPOPSEUS PURPUREUS Girault.

The propodeal median carina is not very strong and has a weak sulcus on each side of it. The V-shaped lateral carina is deeply sulcated mesad along its complete mesal arm; the apex of the V is at the caudo-lateral angle of propodeum and the lateral arm forms the carinated lateral margin of propodeum. The minute spiracle is just a little caudad of cephalic margin and at the mesal edge of the groove; therefore, the latter and the carina forming its lateral edge are laterad of the spiracle and thus no true lateral carinæ are present. Axillæ nearly cephalad of scutellum, the parapsidal furrows only two thirds complete from cephalad and like sutures. Thorax faintly scaly, the parapsides mostly smooth but with long wrinkles caudo-mesad, scaly like the scutum cephalo-laterad. Abdomen subsessile. Tips of tibiæ whitish. Type re-examined.

Genus APLEUROTROPIS Girault.

1. APLEUROTROPIS VIRIDIS Girault.

The parapsidal furrows (or more properly caudo-mesal parapsidal impressions) are wide and shallow, abruptly narrowing cephalad, subglabrous. Axillæ barely advanced. Propodeum nearly smooth. Petiole distinctly longer than wide. Postmarginal vein nearly *thrice* the length of the stigmal. Pronotum glabrous, its cephalic margin with a line of coarse foveæ across it, its neck shagreened. Segment 2 of abdomen short. Venation pale brown. From the type.

NEODEROSTENUS new genus.

For diagnosis, see *antea*, p. 144.

1. NEODEROSTENUS AUSTRALIENSIS new species. Female. Genotype.

Length, 1.10 mm. Abdomen coppery blue. Propodeum smoother than rest of the thorax. Petiole of abdomen short. Postmarginal vein subequal to stigmal, both short. Club terminating in a rather long stout seta; funicle 1 longer than the pedicel, a little shorter than 2 or 3, somewhat longer than wide. Flagellum narrowing distad. Mandibles tridentate. Hind wings short, pointed where widest with about seven lines of discal cilia. Spot on fore wing large. Propodeum much wider than long. Middle tibial spur long and slender, the hind one short. (For rest of description, *see* place cited.)

From a female captured in jungle, May 15, 1913.

[1] For additions, *see* Part XIV.

GENUS PLEUROTROPOMYIA Girault.

1. PLEUROTROPOMYIA LACTEICOXA new species.

Female:—Length, 0.85 mm.

Like the genotype but much less robust and the petiole and the coxæ are white also. The median groove of scutum is shorter, along distal third (along distal half in the genotype). The antennæ in both species are much alike. Mandibles 4-dentate. Hind tibial spur a little long and stout, as long as the first tarsal joint of hind legs which, however, is not especially long. Compared with type of *grotiusi*.

Male:—Not known.

Described from one female captured by sweeping along edge of jungle, June 3, 1913.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2475*, Queensland Museum, Brisbane, the above specimen on a tag, the head and hind tibiæ on a slide.

2. PLEUROTROPOMYIA ÆNEOSCUTELLUM new species.

Female:—Length, 1.75 mm.

Almost exactly similar to the genotype but more brassy especially the scutellum and the segments of the abdomen after the second are longer, 3 and 4 for instance when combined as long as 2 (somewhat shorter in *grotiusi*); also in these abdominal segments, the single transverse row of pubescence is along the cephalic margin in *grotiusi* but here it is central or across the middle. Both species bear a distinct spiracular sulcus which originates just cephalolaterad of the minute spiracle; the axillæ in both and the triangular caudo-mesal corner of each parapside are glabrous, also the postscutellum. The sulcus along meson of scutum in each is about half the length of the scutum from caudad. Segment 7 of abdomen in both next longest after 2 which occupies about a fourth of the surface. Hind tibial spur rather long and stout. Compared with type of genotype.

Male:—Not known.

Described from two females captured by sweeping in forest, November 5, 1913.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2476*, Queensland Museum, Brisbane, one of the above specimens on a tag (minus head).

GENUS PLEUROTROPPOPSIS Girault.

In *antea*, p. 154, table of genera, line 13, *maculipennis* should read *maculatipennis*.

In the genotype the pronotum appears double owing to an obtuse cross-ridge a little beyond middle; it is glabrous but with a row of long setæ from small setigerous punctures, the setæ reclined and directed caudad over the scutum; this row of setigerous punctures is cephalad of the cross-ridge. The wedge-shaped caudal part of each parapsidal furrow is glabrous. Scutum with a few of the very long setæ and one from about the middle of the wedge of the parapsidal furrow. Axillæ barely advanced, glabrous. Lateral margin of scutellum carinated, forming a narrow groove just inside of the carina. From the type.

GENUS HORISMENOIDES Girault.

Female:—With the form of the proctotrypoid genus *Hadronotus* but the abdomen still broader. Venation, antennæ and mandibles as in *Amestocharis* Girault; ring-joints distinct. Parapsidal furrows short but distinct, cephalad only; scutum with a complete, conspicuous median sulcus. Scutellum simple, its cephalic margin triangularly advanced, the axillæ obtusely conically advanced into the scutum, wholly cephalad of the scutellum. Propodeum very short, with a median carina which is paired, apparently; lateral carinæ apparently present, curved.

Petiole very short, the abdomen flat, broadly ovate, the second segment longest, occupying about a third of the surface. Hind tibial spur small, single. Pronotum transverse-linear, distinctly narrower than the mesonotum.

Male:—Not known.

Type: The following species.

1. HORISMENOIDES SULFUREIVENTRIS Girault.

Female:—Length, 1 mm. Short and compact.

Metallic purple, the abdomen and legs lemon or sulphur yellow, the wings hyaline, the head and thorax highly polished like the surface of tar; ocelli in a triangle, the lateral ones distinctly over their own diameter from the eyes which are naked. Scutellum at latero-cephalic corner with a series of short, oblique, more or less parallel striæ as if the corner was wrinkled; these are just caudad of the axillæ. Petiole of abdomen, scape except above, pedicel and second (last) funicle joint purplish; rest of antenna pale lemon yellow; funicle 2 slightly longer than 1, somewhat longer than wide, shorter than the pedicel, longer than the first two club joints (separately); terminal spur of club distinct but not as long as the third (distal) joint, which bears it. Antennæ inserted below the middle of the face.

Described from four females captured by sweeping in a jungle pocket, November 16, 1913.

Habitat: Gordonvale (Cairns), Queensland.

Types: No. *Hy 2477*, Queensland Museum, Brisbane, three of the above on a tag and two heads, two hind tibiæ on a slide.

A female at Cooktown, Queensland, jungle, March 3, 1914 (A. P. Dodd).

In the original description, *antea*, p. 153, footnote, line 1, *axillæ advanced cephalad of scutum* should read *axillæ advanced wholly cephalad of scutellum.*

Genus AMESTOCHARIS Girault.

The species *goondiensis* is the genotype.

1. AMESTOCHARIS NYMPHA Girault.

Antea, p. 148, in the original description, it is stated that funicle 2 is barely longer than 3 and not tapering at apex as much as in *concoloripes*. Funicles 1 and 2 are meant, respectively.

A. AMESTOCHARIS NYMPHA PERSIMILIS new variety.

Female:—Length, 1.20 mm.

Exactly similar to *nympha* but the first funicle joint is as in *concoloripes*, that is, tapers toward apex and is plainly longer than the second (the two are subequal in *nympha*), the mandibles are somewhat broader. Otherwise, I cannot distinguish between them. Both varieties bear broad fore wings. The parapsidal furrows are represented by mere depressions caudad in both.

Male:—Not known.

Described from one female captured by sweeping in virgin jungle (or else from a window), December 30, 1911.

Habitat: Yungaburra, Queensland.

Type: No. *Hy 2478*, Queensland Museum, Brisbane, the above specimen on a tag, the head and hind legs on a slide.

Later, two females were found from Proserpine, Queensland, captured by sweeping the dry bed of the Proserpine River, November 3, 1912. The vertex was nearly smooth, the face lined polygonally.

2. AMESTOCHARIS CARINISCUTUM new species.

Female:—Length, 1.30 mm.

Characterised by bearing on distal part of scutum a distinct median carina, the surrounding surface glabrous and sunk below the level of the rest. Also by having only the tibiæ and tarsi white or yellowish white. Dark metallic green, the abdomen blue, the wings hyaline. Scape white; pedicel subequal to funicle 2 which is a little shorter than funicle 1 which is cylindrical oval, somewhat longer than wide; club longer than the funicle, its first joint subequal to funicle 1, its terminal joint with a long stout terminal spine or projection. Club well defined. Hind tibial spur long and stout, single. Second segment of abdomen occupying two thirds of the surface. Eyes occupying most of the cheeks, the antennæ inserted on a level with their ventral ends, near the mouth. Mandibles with two acute teeth. Vertex glabrous, the face concave. Pronotum glabrous; scutum coarsely polygonally scaly, at distal third or more abruptly glabrous and with a median carina; a large isolated seta on each side of this carina about the center of the subquadrate glabrous area on each side (the area is between the parapsidal furrows, extending to their cephalic ends, the furrows being abbreviated, not half the length of the scutum). Scutellum with long, coarse polygons. Second abdominal segment and propodeum glabrous. Regular polygons on scutellum around mesal apex.

Described from one female caught by sweeping a jungle-lined forest streamlet, June 14, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2479*, Queensland Museum, Brisbane, the specimen on a tag, head on a slide.

3. AMESTOCHARIS GOONDIENSIS Girault.

A female at Gordonvale, Queensland, April 16, 1913 from jungle. The cephalic femur is subconcolorous.

4. AMESTOCHARIS SULCATUS new species.

Hind tibial spurs long and stout. Dorsal abdomen distad of segment 2 with very few setæ, these isolated.

Similar to *goondiensis* with the type of which I have compared it but differing in being rosaceous coppery, the abdomen very dark green, the abdominal petiole is distinctly shorter and stouter, barely longer than wide (in the genotype a half longer than wide), the elongate fovea or median sulcus at base of scutellum is somewhat longer (four times longer than wide) and on the propodeum there is a distinct, short, oblique carina running from the carinated caudal margin a short distance laterad of meson running meso-cephalad across the corner and turning abruptly mesad to the nearer arm of the median carina. Cephalic femora all white. Axillæ glabrous in both species. Club with a stout curved terminal spine. Pedicel shorter than either funicle joint, the latter narrowing cephalad, a half longer than wide, subequal, longer than the club joints; the latter each somewhat longer than wide, the club slightly longer than the funicle. Petiole shagreened. Meso-caudal end of parapside glabrous. Cephalic margin of pronotum with rather long setæ, each widely separated.

From one female caught in jungle, May 4, 1914 (A. P. Dodd).

Habitat: Tweed Heads (Tweed River), New South Wales.

Type: No. *Hy 2480*, Queenslaud Museum, Brisbane, the specimen on a tag; head and hind tibia on a slide.

GENUS ENTEDONELLA Girault.

1. ENTEDONELLA MAGNIFICA Girault and Dodd.

Length, 3 mm. Brilliant metallic purple; coxæ concolorous, anteunæ (except scape) concolorous; rest of legs and antennal scape bright golden yellow. Segment 2 of abdomen ecual to a fifth of the surface, the petiole quadrate, the abdomen short and stout. Funicle 1 distinctly longer thau pedicel, nearly twice as long as wide; 2 and 3 subequal, shorter than 1,

no longer than pedicel, club as long as funicle 1; first club joint the longer, as long as last funicle joint. Hind tibial spur long and stout. Distal club joint with a nipple. First ring-joint large. Parapsidal furrows complete. Propodeum glabrous. Sulcus on each side of median carina with carinated lateral margins. No lateral carinæ.

Habitat: Croydon, Queensland. November 30, 1908 (S. W. Fulton). No. 20.

Type: In the National Museum, Melbourne. A female on a tag, the head and hind legs on a slide.

A large sulcus near lateral margin of propodeum contains the spiracle. It is incomplete and enlarges cephalad.

GENUS PELOROTELOPSELLA Girault.

This genus is in a wrong place in the table of genera previously. *See* following.

1. PELOROTELOPSELLA ALBIGENU new species of A. P. Dodd.

Female:—Length, 2 mm.

Very similar to the type species, *genu* Girault, but the thorax is more coarsely punctate, the abdomen is distinctly longer than its greatest width (barely so in *genu*), the second segment occupying less than a fourth of the surface, its caudal margin somewhat convex (quite straight in *genu*).

From two females caught by sweeping in forest, February 19, 1914 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2482,* Queensland Museum, Brisbane, one specimen on a tag, the head on a slide.

The lateral sulcus of propodeum in *genu* is foveate and originates just mesad of the spiracle.

GENUS PSEUDACRIAS Girault.

1. PSEUDACRIAS QUINQUECARINATUS new species.

Female:—Length, 1.50 mm.

Meson of propodeum plainly tricarinate. Head and thorax brilliant reddish coppery, the abdomen black, its second segment occupying half of the surface. Proximal three tarsal joints white. Separated from *micans* and *quadricarinatus* by bearing one more propodeal carina, from *chalybs* by having the second abdominal segment distinctly longer and the pedicel is not much shorter than funicle 1; from *salvus* it differs in general coloration, being metallic—the pronotum is sculptured in that species and the scaly sculpture of the scutum is polygonal, not forming diamonds as in this species. Thus, closest to *æneus* but that species has the pronotum finely reticulated (smooth here, no sculpture visible at same magnification but the *face* of the pronotum is polygonally scaly, distinctly so) and the fore wings are distinctly broader yet broad in this species. In this new species, the scutellum laterad longitudinally striate, smoother along the meson, the striæ not numerous and anastomosing only at long intervals. No distinct polygonal sculpture on scutellum. Mandibles bidentate. Abdomen polished, the petiole opaque. The second club joint is longer than in *æneus,* the antennæ slightly less stout. Head beneath antennæ smooth or nearly. Petiole longer than wide.

From one female caught by sweeping jungle, Kuranda, May 14, 1913 (A. P. Dodd).

Habitat: Kuranda and Babinda, Queensland.

Type: No. *Hy 2483,* Queensland Museum, Brisbane, the specimen on a tag, head on a slide (Kuranda).

Several females were reared from cockroach eggcases from jungle, Babinda, Queensland, February, 1914. The color of the thorax varies from brilliant rosaceous to rather dark green (A. P. Dodd).

2. PSEUDACRIAS CHALYBS Girault.

Antea, p. 150, most of the generic diagnosis (exceptionally) refers to this species and not to the genotype which was included later.

Pronotum polished except along cephalic margin; there is a broad smooth path down the meson of scutellum but laterad on this sclerite there are long polygons formed by reticulation. Abdominal petiole a little wider than long.

3. PSEUDACRIAS SALVUS new species.

Female:—Length, 1.25 mm.

Black, the wings hyaline, the tips of the tibiæ and the tarsi white; segment 2 of abdomen occupying about half the surface, the abdomen slender, flat. Propodeum tricarinate at the meson. Pro- and mesonotum polygonally reticulated, the scutellum longitudinally striate. Cephalic half of parapsidal furrows obsolete or nearly, caudad plainly indicated by depressions just mesad of each axilla. Joints 2 and 3 of funicle plainly wider than long, the first club joint slightly so, funicle 1 globular. Antennæ wholly black. Abdomen dorsad finely reticulated. Mandibles with two distinct outer teeth. Spur on club prominent.

Male:—Unknown.

Described from one female captured from the foliage of an imported citron tree in a clearing near the jungle, October 29, 1912.

Habitat: Babinda, Queensland.

Type: No. *Hy 3458*, Queensland Museum, Brisbane, the above specimen on a tag.

ENTEDONOMYIA new genus.

Female:—Head normal, the vertex broad, the antennæ 9-jointed with two ring-joints, the club solid, the funicle 4-jointed, the joints petiolate. Pronotum distinct, transverse, the parapsidal furrows complete. The scutellum simple, the propodeum with lateral carinæ and two median carinæ which diverge somewhat and which are rather widely separated. Postmarginal and stigmal veins very short. Petiole of abdomen distinctly longer than wide, the second abdominal segment occupying about half the surface, the others short. Hind tibial spur single, long and stout.

Male:—Not known.

1. ENTEDONOMYIA PLATONI new species. Genotype.

Female:—Length, 1.15 mm.

Dark metallic green, the abdomen blue, the wings hyaline; tibiæ and tarsi pale yellowish. Second abdominal segment and propodeum glabrous; rest of abdomen scaly, the petiole densely so. Thorax coarsely polygonally scaly, a small triangular area at meson of base of scutellum glabrous; on each side of this there is an appearance of longitudinal converging striation which distad farther gives way to the scaliness. Scutum with long yellowish hairs (six or so). Pedicel small, oval, much smaller than any of the funicle joints, of which the first is longest, somewhat longer than wide, stout, 4 a little wider than long, somewhat longer than the pedicel.

From one female caught by sweeping in jungle, May 20, 1913.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2484*, Queensland Museum, Brisbane, the specimen on a tag; head and hind leg on a slide.

"A female sweeping in forest near Cairns, December 24, 1911 (A.A.G.). Parapsidal furrows distinct." (A. P. Dodd.)

EPENTEDON new genus.

Female:—Head a little wider than long, the antennæ inserted below the middle, 10-jointed, three ring and funicle joints, the distal joint of club terminating in the usual distinct spine. Mandibles bidentate. Propodeum distinctly tricarinate, the median carina bounded on each side by a sulcus whose lateral margin is carinated, forming three converging carinæ on the propodeum; lateral carinæ present. Scutellum simple. Second segment of abdomen occupying a third of the surface, the others much shorter. Parapsidal furrows complete, deep and distinct, narrowing cephalad. Pronotum transverse. Petiole of abdomen somewhat longer than wide. Marginal vein nearly twice the length of the submarginal, the postmarginal vein elongate, over twice the length of the sessile but long-elliptical stigmal, about a third the length of the long marginal. Hind tibial spur normal. Like *Pelorotelopsella* Girault but the postmarginal vein elongate, three ring-joints, lateral carinæ present. Like *Pleurotroppopsis* but the median carina of propodeum is bounded by sulci.

Male:—Not known.

1. EPENTEDON UNNOTIPENNIS new species. Genotype.

Female:—Length, 1.70 mm.

Metallic blue-green, rather dark, the wings hyaline but with a rather large, ovate smoky brown spot appended from the knob of the stigmal vein and extending across the wing nearly to caudal margin but most distinct as a round spot under the stigma. Legs yellowish brown, the coxæ concolorous, the antennæ wholly concolorous; second ring-joint very short, the others large; funicle 1 longest, 3 a little larger than the pedicel, oval, shorter than 1. Second tooth of mandible truncate mesad.

From one female reared from fleshy galls on gum, March 20, 1911 (F. P. Spry).

Habitat: Melbourne, Victoria.

Type:—In the National Museum, Melbourne, the above specimen on a tag, the head on a slide.

DEROSTENOIDES new genus.

Female:—Like *Neoderostenus* Girault but the propodeum with a curved lateral carina whose mesal side is deeply sulcated. Mandibles strongly bidentate, the inner edge of the inner (mesal) tooth with five or six fine teeth like the inner teeth in the mandibles of many Elachertini. Meson of propodeum polished, convexed. Antennæ with two ring-joints, the club 2-jointed, the antennæ 9-jointed, inserted somewhat below the middle of the face. Segment 2 of abdomen occupying about a fourth of the surface, longest, the petiole short. Postmarginal and stigmal veins short, subequal. Parapsidal furrows complete, extraordinarily thin, the scutum cephalad declivous, the *pronotum absent* (not visible from above but the suture between the pro- and mesothorax is on the neck). Hind tibial spur normal. Axillæ advanced barely at all.

Male:—Not known.

1. DEROSTENOIDES NEGLECTUS new species. Genotype.

Female:—Length, 0.80 mm.

Dark metallic green, the wings stained rather deeply, the legs, scape and pedicel reddish brown (coxæ metallic), the pedicel suffused with dusky. Thorax nearly black, with polygonal reticulation, the lines not raised, somewhat coarser on the scutellum which has a smooth spot centrally at base. Funicle joints more or less globular and subequal, the second a little the largest. Inner margin of first tooth of mandible minutely, slightly serrate. Pedicel longer than funicle 1.

Described from one female collected by Mr. A. M. Lea.

Habitat: Cairns District, Queensland.

Type: No. *Hy 2485*, Queensland Museum, Brisbane, the above specimen on a tag, the head on a slide.

The genus is allied with *Pelorotelopsella.*

ZAOMMOMENTEDON new genus.

Female:—In my table of genera runs to *Pleurotropomyia* Girault from which it differs in bearing a complete, distinct median sulcus on the scutellum in addition to one along distal two thirds of scutum. Also the eyes occupy near the whole side of the head, the antennæ inserted far down near the mouth, the scrobes short, forming a triangle but continued to the cephalic ocellus in the form of a long sulcus. Eyes hairy, rather coarse, not reaching to base of mandible. Postmarginal and stigmal veins unequal, the former longer, subelongate, the latter a little longer than usual, the marginal vein very long. Hind tibial spur normal. Propodeum with distinct lateral carinæ only, these joining along caudal margin, the spiracle minute, round. Lateral carina at base (cephalad) forking, a short branch running latero-caudad, mesad of the spiracle and a complete, narrow sulcus just laterad of spiracle. A pair of rather widely separated median carinæ indicated at apex of propodeum by short spurs from the carinated caudal margin. Abdominal petiole slender, longer than the hind coxæ. Second segment of abdomen short, somewhat longer than the others; scutellum long. Mandibles 6-dentate! Axillæ barely advanced.

Male:—Not known.

1. ZAOMMOMENTEDON MANDIBULARIS new species. Genotype.

Female:—Length, 1 mm.

Metallic blue-green, the wings hyaline, the legs (except hind coxæ, other coxæ not plainly seen) and scape pure white. Pronotum, propodeum, extreme meso-caudal angles of parapside and apex of scutellum glabrous, the pronotum with a line of fovea across cephalic edge. Head and rest of thorax polygonally lined, the lines not raised. Hind wings with about seven lines of discal cilia where broadest. Funicle joints oval, 1 a little the longest, the pedicel still smaller. Terminal seta of club short, distinct.

From one female caught in jungle, January 18, 1914 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2486,* Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

NEOPSEUDACRIAS new genus of A. P. Dodd.

Female:—Agreeing with *Pseudacrias* Girault but there are only two ring-joints, the hind tibial spur is not stout, the second abdominal segment occupies fully two thirds of the surface. Propodeum with a pair of diverging median carinæ and true lateral carinæ. Antennæ 9-jointed, the funicle 3, the club 2-jointed.

Male:—Not known.

1. NEOPSEUDACRIAS SPLENDIDUS new species of A. P. Dodd. Genotype.

Female:—Length, 1.75 mm.

Dark metallic green, the abdomen darker, the propodeum coppery, the coxæ concolorons; rest of legs and antennal scape intense lemon yellow, rest of antennæ black. Wings hyaline, the stigmal and postmarginal veins very short. Thorax finely reticulate, the reticulation in raised lines, the center and apex of scutellum smooth. Propodeum smooth. Petiole short and stout, the abdomen stout, conic-ovate. Pedicel shorter than any of the funicle joints, which are much longer than wide, the first slightly the longest, the first club joint subequal to funicle 3 and longer than 2 which terminates in a short spine. Mandibles bidentate, the teeth acute.

From one female caught by sweeping foliage in jungle, May 19, 1913 (A. P. Dodd).

Habitat: Kuranda, Queensland.

Type: No. *Hy 2487,* Queensland Museum, Brisbane, the specimen on a tag, the head and a hind leg on a slide.

OMPHALENTEDON new genus.

Female:—Like *Mestocharis* Foerster but the antennæ with three ring-joints.

1. OMPHALENTEDON LONGUS new species. Genotype.

Female:—Length, 1.50 mm. Abdomen conical, somewhat longer than the thorax.

Dark metallic æneous green, the broad fore wings hyaline, the legs (except cephalic coxæ) and the scape white. Petiole of abdomen brownish, wider than long. Thorax very coarsely polygonally reticulate, the lines raised, finer on cephalic scutum, the pronotum scaly. Propodeum glabrous, strongly tricarinate. Abdomen glabrous, hairy distad of segment 2 which occupies somewhat less than a fourth of the surface. Postmarginal and stigmal veins short, subequal. Hind tibial spur normal. Parapsidal furrows along caudal half, obtuse. Axillæ much advanced but only about half projects cephalad of scutellum. Pronotum transverse-linear. Marginal vein twice the length of the submarginal. Pedicel subequal to funicle 1 which is one and a half times longer than wide, slightly longer than 2, 3 still shorter; terminal spine of club distinct, long. Club 1 subquadrate. Mandibles acutely bidentate.

Male:—Not known.

Described from one female captured in jungle, May 29, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2488*, Queensland Museum, Brisbane, the specimen on a tag; head and hind leg on a slide.

MESTOCHAROMYIA new genus.

Genotype, *Mestocharis lividus* Girault. Includes *Mestocharis veternosus* and *silvensis*. Each species bears a paired median carina on the propodeum; *lividus* has a middle short one at base, also *silvensis* but the short carina is longer and split. In *veternosus*, the short third middle carina is absent, the propodeum at meson with two separated carinæ. Types re-examined.

ENTEDONOPSEUS new genus.

Female:—Agreeing in every particular with *Entedonomyia* Girault except that the antennæ bear three ring-joints and the two median carinæ of propodeum are close together, diverging only at apex.

1. ENTEDONOPSEUS TRICOLORIPES new species. Genotype.

Female:—Length, 1.65 mm.

Agrees with the description of the genotype of *Entedonomyia* except that it is more robust, the abdomen distad of segment 2 is coppery, the tibiæ are metallic blue, orange at tip, the tarsi white, their distal joint black. Also the hairs on scutum are black, funicles 2-4 are quadrate and subequal, each much larger than the pedicel, 1 only slightly longer than wide. Club distinctly longer than any of the funicle joints. Type antennæ of *Entedonomyia* compared.

From one female taken from foliage of jungle plants, May 13, 1914 (A. P. Dodd).

Habitat: Chindera (Tweed River), New South Wales.

Type: No. *Hy 2489*, Queensland Museum, Brisbane, the specimen on a tag; head and a caudal tibia on a slide.

PARAHORISMENUS new genus.

Female:—Like *Horismenus* Walker but the antennæ with two ring-joints, the first large, distinct, the second moderately short yet longer than usual. Propodeum with a median carina bounded by sulci whose lateral margin is not distinctly carinated. Also in the mesal area a curved carina on each side of the meson but some distance from the median carina yet meeting

the latter at caudal end, the pair forming an oblate sphere whose axis is the median carina; this carina originates cephalad some distance from the median carina and is thin there and more or less broken. True lateral carina present but running oppositely, thus caudo-laterad; the latter carina is narrowly connected with the curved carina of the mesal area by a cross-carina at about cephalic third. Spiracle minute, round. Scutellum with a foveate median groove, terminating at apex as a carina. Parapsidal furrows complete. Pronotum transverse linear. Caudal tibial spur single, normal. Postmarginal vein twice the length of the very small stigmal. Axillæ only very slightly advanced. Abdomen (in death) with its dorsal surface applied to the dorsal surface of the thorax. Scutum shorter than the scutellum, wider than long.

1. PARAHORISMENUS SPISSIPUNCTATUS new species. Genotype.

Female:—Length, 1.70 mm.

Dark metallic blue, the thorax with a trace of coppery; proximal three tarsal joints white; fore wings deeply smoky from base distad nearly to apex of marginal vein, distad the infumation suffused, not clearly delimited; hind wings smoky for nearly proximal two thirds. Marginal vein about twice the length of the submarginal. Scape slender, longest; pedicel rather long, subequal to funicle 3; funicle 1 longest of the flagellum, nearly twice longer than wide, rather stout, slightly longer than 2; club 1 longer than 2, the latter with a distinct terminal spine. Caudal and intermediate tibia with stiff bristles dorsad. Abdomen flat, dorsal aspect rounded oval, segment 2 longest, occupying somewhat less than half the surface. Abdomen and propodeum glabrous, the head and thorax umbilicately punctate, the parapsides finely shagreened except along all margins. Parapsidal furrows foveate. Petiole very short, wider than long, glabrous. Hind coxa glabrous. Mandibles with at least two outer acute teeth. Thorax covered with rather thick black-brown pilosity. Punctures on head smaller and less dense.

From one female caught in jungle, May 3, 1914 (A. P. Dodd).

Habitat: Tweed Heads (Tweed River), New South Wales (*see* below).

Type: No. *Hy 2490*, Queensland Museum, Brisbane, the specimen on a tag; head and a caudal leg on a slide.

Also one female, Grafton (Clarence River), New South Wales, June 3, 1914 (A. P. Dodd).

HORISMENELLA new genus.

Female:—In my table of genera runs to *Pleurotropopseus* Girault but differs in having the postmarginal vein elongate; the lateral carina of propodeum is not V-shaped but entire and a short curved carina just mesad of spiracle originates laterad of the cephalic end of the lateral carina. The median groove of scutum is along distal two thirds or somewhat more. Caudal tibial spur long, stout and curved, longer than the first tarsal joint of caudal legs. Postmarginal vein over thrice the length of the stigmal, the latter subsessile; marginal vein over twice the length of the submarginal. Otherwise the same as originally described for the named genus. Segment 2 of abdomen occupying a little less than a fourth of the surface, over twice the length of 3; strigils absent. Three ring-joints; really runs to *Pleurotropomyia*.

1. HORISMENELLA CLARIVIRIDIS new species. Genotype.

Female:—Length, 1.90 mm.

Bright metallic green, the abdomen dark blue except segments 2 and 3; legs, scape and abdominal petiole silvery white, the coxæ and petiole suffused with orange. Fore wings with an obscure dusky spot in the center of the blade opposite the stigmal vein. Funicle 1 longest, 2 and 3 each shortening a little, 3 longer than the pedicel, over twice longer than wide, longer than club 1; club 2 somewhat shorter than the pedicel, with a distinct but not very long

terminal spine. Pedicel longer than wide. Frons broad, cheeks short, mandibles tridentate. Petiole of abdomen nearly as long as the hind coxæ. Segments 2 and 3 of abdomen smooth, naked, 4 and 5 each with two rows of minute setigerous punctures, 6 and 7 each with about five rows of them. Thorax coarsely scaly, axillæ finely so; caudo-mesal half of parapsides sunken (or the representative of the parapsidal furrow) and subglabrous and with a minute fovea a little cephalo-laterad of the middle of its mesocephalic margin; this fovea also somewhat before the caudal end of the parapsidal furrows and it gives origin to a very long and slender yellowish seta. Parapsidal furrows mere sutures, distinct, abbreviated caudad, curving off before pronotum, the latter glabrous and with a row of punctures along its cephalic margin; these punctures give rise to isolated, very long bristles. Propodeum glabrous. Postscutellum very much smoother than scutellum.

From two females caught by sweeping at 1,000 feet, forest, May 17, 1914 (A. P. Dodd).

Habitat: Upper Tweed River, New South Wales.

Type: No. *Hy 2491*, Queensland Museum, Brisbane, one of the specimens on a tag; head, fore legs and a hind tibia with type slide of *Omphalentedon longus* Girault.

2. HORISMENELLA VARICOXA new species.

Female:—Length, 1.68 mm.

Differs from the genotype in having the last two pairs of coxæ concolorous, the hind femur a little dusky above at proximal half, the abdominal petiole yellowish brown, the wings hyaline, the median groove of scutum somewhat shorter, funicle 3 is only somewhat longer than wide, subequal to the pedicel and to 2, somewhat shorter than 1 and the general coloration is less bright, darker. Compared with type of genotype. Scape metallic at tip above.

From two females caught in forest, June, 1914 (A. P. Dodd).

Habitat: Burnett Heads, Southern Queensland.

Type: No. *Hy 2492*, Queensland Museum, Brisbane, two females on a tag, two heads and a hind tibia on a slide.

The median carina in this genus is a little divided cephalad.

In the table of genera, *antea*, p. 153, it should be noted that *Pelorotelopsella* should be included with *Mestocharoideus*, since there are no lateral carinæ on the propodeum; lateral sulci replace the carinæ. Same place, 153, line 6 from bottom *carinæ* should read *carina*. In *Horismenus antiopa*, the lateral and caudal margins of propodeum are strongly carinate, the reticulation of the thorax raised, segment 2 of abdomen glabrous.

Tribe PEDIOBIINI.

In the table of genera, *antea*, p. 156, last line of section I, *two* should read *true*; last line of section III, *nigriviridus* equals *nigriviridis* Girault.

BÆOENTEDON new genus.

Female:—Form as in *Horismenoides* Girault. Antennæ inserted below the middle of the face, 6-jointed with two ring-joints, the club solid, one funicle joint. Parapsidal furrows not indicated. Scutellum simple. Abdomen short and broad, from dorsal aspect rounded, as wide as the thorax and somewhat shorter, the thorax convex. Venation as in the Omphalini, the stigmal vein very long, the marginal not quite as short as the submarginal. Pronotum not visible from above, the propodeum short, broad, apparently noncarinate, the spiracle minute. Abdomen sessile. Mandibles acute. Hind tibial spur normal.

Male:—Unknown.

1. BÆOENTEDON PECULICORNIS new species. Genotype.

Female:—Length, 0.80 mm.

Dark metallic purple, the wings hyaline, the abdomen pale honey yellow, darker along distal half, there with several faintly indicated still darker and narrow cross-stripes. Distal half of tibiæ, the antennæ, the tarsi and hind legs beyond proximal half of femora white or yellowish white. Thorax coarsely polygonally reticulated, the lines not raised. Club conically produced at apex into a spine, conic-ovate, longer than the long pedicel, the funicle joint urnshaped, a little longer than wide, distinctly shorter than the pedicel. Scape slender. Ring-joints large and distinct, purple; pedicel purple at base.

Described from one female captured in jungle, December 31, 1911.

Habitat: Malanda, Queensland.

Type: No. *Hy 2493*, Queensland Museum, Brisbane, the specimen on a tag, the head on a slide with the type appendages of *Pseudacrias quadricarinatus* Girault.

TRIBE TETRACAMPINI.

GENUS TETRACAMPE Foerster.

1. TETRACAMPE AUSTRALIENSIS new species of Girault and A. P. Dodd.

Female:—Length, 1.50 mm.

Dark metallic green, the abdominal petiole, legs and antennal scape bright golden yellow, rest of antennæ black. Fore wings hyaline; discal cilia not arranged in regular lines; marginal cilia not long; submarginal vein somewhat broken; marginal vein as long as submarginal, twice as long as postmarginal; stigmal vein with a small knob, short, one fifth as long as the marginal. Antennæ inserted below middle of face; 12-jointed, 1 ring-joint, 6 funicle joints and a 3-jointed club; scape slender; pedicel larger than first funicle joint; funicle joints filiform, first a little the longest, two thirds longer than wide; club scarcely wider than funicle, as long as last two funicle joints united, the joints about subequal. Posterior tibiæ with one apical spur; tarsi 5-jointed. Mesopleura without sutures. Pronotum rather large. Scutum with distinct parapsidal furrows. Scutellum with a rather faint cross-suture. Pronotum, scutum and scutellum with very fine polygonal scaly sculpture. Propodeum rather short, glabrous, with a median carina and several irregular lateral carinæ. Abdominal petiole as long as the hind coxæ; abdominal segments not excised at meson of caudal margin; suture between second and third segments deep; second segment longest, equal to one fifth of surface. Mandibles bidentate.

From one female caught by sweeping in forest, August 7, 1913 (A.A.G.).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2494*, Queensland Museum, Brisbane, the specimen on a tag, the head and posterior legs on a slide.

TETRACAMPOIDES new genus of A. P. Dodd.

Female:—Head normal; antennæ inserted near the mouth border, 12-jointed with one ring-joint and a 3-jointed club; funicle joints wider than long. Pronotum distinctly separated; scutum with deep complete parapsidal furrows; scutellum simple; propodeum with a tooth laterad at the middle, not short, with a distinct median and fainter lateral carinæ. Axillæ not advanced. Marginal vein as long as the submarginal, many times length of stigmal, the postmarginal twice as long as the stigmal, the latter of moderate length. Hind tibiæ with two apical spurs. Mandibles bidentate. Abdomen sessile, gently convex above and beneath, second segment occupying over half of surface. Resembling the Entedonini in many respects.[2]

Male:—Not known.

[2] The number of tarsal joints is not stated, but there are doubtless five.

1. TETRACAMPOIDES SETOSUS new species of A. P. Dodd. Genotype.

Female:—Length, 1.75 mm.

Dark metallic blue, the coxæ and femora concolorous, the scutellum and base of abdomen brighter, the tibiæ and tarsi white, the antennæ wholly black. Thorax with exceedingly fine scaly sculpture and long whitish pubescence, the propodeum quite smooth. Abdomen with second segment smooth, the rest with sculpture and pubescence like the thorax. Wings hyaline. Scape moderately slender, the pedicel not long but as long as first two funicle joints combined; flagellum somewhat clavate, the funicle joints fully twice as wide as long; club with a terminal nipple, the club joints all much wider than long.

Described from one female caught in jungle, February 5, 1914 (A. P. Dodd).

Habitat: Babinda, Queensland.

Type: No. *Hy 2495*, Queensland Museum, Brisbane, the female on a tag; head on a slide.

The middle lateral tooth on propodeum is really the acute caudo-lateral angle of that region.—A. A. Girault.

PLATYTETRACAMPE new genus.

Male:—Form flattened, the vertex flat, the face much inclined ventro-caudad, the antennæ inserted at the mouth border, capitate, 11-jointed without ring-joints, the club 3-jointed, the six funicle joints annular, the distal two stalked. Pronotum rather large, the scutum wider than long, without a trace of furrows. Marginal vein longer than the submarginal but not very long, the postmarginal one half the length of stigmal, the latter slender but rather short. Mandibles bidentate. Scutellum simple. Tarsi 4-jointed. Abdomen rounded subquadrate, flat, with a very short petiole, all the segments short, transverse. Spiracle of propodeum minute, round. Propodeum with a rather stout transverse carina at cephalic third (in reality the caudal margin of the sunken postscutellum which continues laterad across the lateral part of the propodeum cephalad of the spiracle), at the meson with two carinæ which are curved and wide apart, with a narrow, rather obscure sulcus in the place of the lateral carinæ and an oblique, complete carina just laterad of the spiracle. Hind femur swollen just before tip. Hind tibial spur single.

Female:—Not known.

1. PLATYTETRACAMPE FUNICULUS new species. Genotype.

Male:—Length, 0.90 mm.

Black, shining; tarsi except first joint of hind tarsus and the funicle silvery white. Fore wing yellowish under the marginal vein (margin to margin, the infumation suffused). Pedicel over three fourths the length of the funicle, the joints of the latter rapidly widening distad, 6 largest. Club a little longer than the pedicel. Scape not enlarged. Distal club joint with a short nipple. Whole body scaly reticulate.

From one male caught by sweeping in jungle, December 2, 1913 (A. P. Dodd).

Habitat: Kuranda, Queensland.

Type: No. *Hy 2496*, Queensland Museum, Brisbane, the specimen on a tag; head, pair of wings, middle legs and a hind leg on a slide.

TRIBE OMPHALINI.

GENUS EUDERUS Walker.

1. EUDERUS MESTOR (Walker). Female.

"Sp. 5. Eul. Mestor. Fem. *Viridis, antennæ nigræ, abdominis discus cupreus, pedes virides, tarsi albidi, alæ limpidæ.*

"Viridis: oculi et ocelli rufi: antennæ nigræ; articuli 1^us^ et 2^us^ virides: abdominis discus cupreus: pedes virides; trochanteres picei; genua fulva; tarsi albidi, apice picei; protarsi fulvi, apice fusci: alæ limpidæ; squamulæ piceæ; nervi proalis fusci, metalis fulvi. (Corp. long. lin. $1\frac{1}{6}$; alar. lin. $1\frac{3}{4}$.)

"March; King George's Sound, Australia.

"*Fem.*—Corpus longum, angustum, nitens, scitissime squameum, parce hirtum: thorax fusiformis, parum convexus: prothorax bene determinatus, transversus, antice angustus: mesothoracis scutum longitudine paullo latius; parapsidum suturæ vix conspicuæ; scutellum breviovatum: metathorax sat magnus, transversus, lævis: petiolus brevissimus: abdomen longiovatum, læve, supra depressum, subtus basi carinatum, apice acuminatum, thorace paullo latius vix longius: pedes simplices, subæquales."

GENUS SECODES Girault.

1. SECODES CAPENSIS new species.

Female:—Length, 0.85 mm., excluding ovipositor.

Propodeum longer laterad. Postmarginal vein a little longer than the stigmal. Funicle joints wider than long. Abdomen ovate, a little longer than the thorax. See *antea*, p. 160. Taken in forest, December 27, 1912. *Antea*, p. 160, line 3, *tibiæ* should read *tarsi*

GENUS OMPHALOMORPHA Girault.

1. OMPHALOMORPHA FRATER new species.

Female:—Length, 1.25 mm.

Similar to *viridis* but the ovipositor and valves exserted for a third the length of the abdomen; the propodeum is as in *repercussa*.

From one female captured in forest.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2497*, Queensland Museum, Brisbane, the female on a tag, head on a slide.

2. OMPHALOMORPHA REPERCUSSA Girault.

The scutellum (from laterad) overhangs the propodeum, the latter shortening at the meson but the median carina is distinct and of some length.

GENUS RHICNOPELTELLA Girault.

The abdomen is not depressed. Synonym: *Elachertetrastichus* Girault.

1. RHICNOPELTELLA ACUMINATA new species.

Female:—Length, 1 mm.

Like *consobrinus* Girault but slender, the abdomen conic-ovate, longer than the rest of the body. Tibiæ yellow. Antennæ wholly concolorous, the pedicel as long as the funicle, about four times longer than funicle 3; ring-joints equal, each about half the length of funicle 1 which is about half the length of funicle 2 which is nearly as long as 3. Postmarginal vein shorter than the stigmal. Third tooth of mandible distinctly shorter than the other two which are subequal.

From one female captured in forest, February 17, 1913.

Habitat: Seymour (Ingham), Queensland.

Type: No. *Hy 2498*, Queensland Museum, Brisbane, the specimen on a tag; head, hind tibia and fore wing on a slide.

2. RHICNOPELTELLA FLAVIPES Girault.

The scape is concolorous at distal third only, the pedicel wholly concolorous; rest of antenna more or less yellowish white. Type re-examined. The following new variety was reared from galls on Eucalyptus, October, 1913 at Gordonvale, Queensland.

A. RHICNOPELTELLA FLAVIPES BINOTATA new variety.

Female:—Like the typical form in all details but all of the underside of the abdomen except at base, the tip above and a spot on each side just before the tip dull golden yellow.

Types: No. *Hy 2499*, Queensland Museum, Brisbane, two females on a tag.

3. RHICNOPELTELLA MULTIFASCIATA new species.

Female:—Length, 1.35 mm.

Dark coppery green, the wings hyaline, the legs pale golden yellow except the coxæ; antennæ concolorous with legs except scape above and the entire pedicel which are metallic green. Thus very much like *flavipes binotata* except the darker general color and that the entire abdomen is dull golden yellow crossed by five coppery green stripes, the first at base and longest (caudo-cephalad), the fifth near apex and more or less interrupted at the meson. Prepectus dull yellow. Otherwise the same. Both are very finely densely punctate. Funicles 1 and 2 subequal in length, 2 wider, both like ring-joints; funicle 3 distinctly shorter than the pedicel, much wider than long, thrice or more longer than 2.

From one female caught January 23, 1913 in forest.

Habitat: Townsville, Queensland.

Type: No. *Hy 2500,* Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

4. (ELACHERTETRASTICHUS) RHICNOPELTELLA ÆNEIPES (Girault).

Compared with type of *immaculatipennis.*

Differs from the genotype in having cephalic tibiæ wholly yellowish white, not concolorous just below knee for some distance. Club not shortened or enlarged and obliquely truncate as in *flavipes* but as in the genotype, *i.e.,* much longer than wide, distinctly longer than the funicle. There are four "ring-joints." Antennæ brown, scape and pedicel black or very dark metallic. Joint 7 of antennæ nearly a half shorter than 8.

5. (ELACHERTETRASTICHUS) RHICNOPELTELLA HEGELI new name.[3]

Elachertetrastichus purpureus Girault.

A distinct species, the four ring-joints of the antennæ abruptly separated from the two subequal funicle joints. Club as in *æneipes* but no longer than the funicle. Spot on hind tibia very obscure.

6. RHICNOPELTELLA NUBILIPENNIS new species.

Female:—Length, 1.75 mm.

Dark metallic green, the wings lightly infuscated from bend of submarginal vein distad to apex; legs golden yellow except coxæ and the hind femur. Antennæ fuscous, the scape beneath pale. Club not enlarged, conic-ovate, not quite as long as the funicle (including ring-joints). Three distinct subequal ring-joints, the fourth joint after pedicel also ring-like but distinctly larger than the three preceding, about a third the length of the next joint; last two joints of funicle (the two distinct funicle joints) unequal, the first quadrate, a little over half the length of the pedicel, the distal a little wider than long, barely shorter than the preceding. Pedicel elongate. Abdomen conic-ovate. Postmarginal vein distinct, shorter than the stigmal which is a little over half the length of the marginal. Same as other species in sculpture and allied with *filia.*

From many females from the National Museum, Victoria.

Habitat: Melbourne, Victoria.

Types: In the National Museum, Melbourne, four females on a card, a head on a slide.

The dorsal and ventral margins of cephalic femur more or less dusky. From galls on gum, March.

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[3] G. W. F. Hegel.

GENUS BRACHYCHRYSOCHARELLA Girault.

1. BRACHYCHRYSOCHARELLA BELLA new species.

Female:—Length, 0.95 mm.

Differs from *dubia* in having the front and middle femora black also and the hind tibia and middle one, the latter just below the knees only; also, the fore wing is distinctly narrower and more densely ciliate discally. From *globa* in having the antennæ all pale, the hind tibiæ concolorous and the distinctly narrower fore wing. Marginal vein much shorter than the submarginal. Mandibles bidentate. Fore wings with about nineteen lines of short discal cilia.

From one female captured by sweeping in forest, January 4, 1913.

Habitat: Capeville (Pentland), Queensland.

Types: No. *Hy 2502*, Queensland Museum, Brisbane, two females on a slide with an *Euryischia*.

GENUS RHICNOPELTOMYIA Girault.

1. RHICNOPELTOMYIA VOLTAIREI new species.

Female:—Length, 1.50 mm.

Intense golden, the fore wings with an obscure blotch from apex of the stigmal vein. Caudal margin of pronotum very narrowly across meson and the entire scutum except extreme cephalo-lateral corner, dark metallic green, the funicle and club dusky black, the base of abdomen above with a rather large, rounded metallic blue spot on each side of meson, both connected across meson forming more or less of a cross-stripe; cephalic margin of propodeum narrowly metallic green. Abdomen with four (usually visible as three, the distal one fainter), narrow, complete, cross-stripes on middle, remote from base or apex, the distal three each curved shortly cephalad at meson, 2 and 3 close together, midway between 1 and 4. Tip of valves of ovipositor black. Thorax finely scaly, the propodeum very finely so, noncarinate, the scutum very coarsely scaly. Marginal fringes of fore wing short; postmarginal and stigmal veins more or less subequal. Caudal wings broad, with about ten lines of discal cilia where broadest. Scutellum with the usual long seta on each side a little distad of middle. Mandibles tridentate. Club well defined, with a distinct terminal spine which is nearly as long as the joint which bears it; pedicel stout, long, nearly two thirds longer than wide; funicle 2 somewhat longer than 1, somewhat shorter than the pedicel, stout, plainly longer than wide. Flagellum tapering.

From one female captured in forest, April 27, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2503*, Queensland Museum, Brisbane, the specimen on a slide with type of *Chrysocharomyia bicolorithorax*.

A second female same place, May 18, 1914.

2. RHICNOPELTOMYIA DOUGLASSI Girault.

A female at Gordonvale, Queensland, April, 1913. The head is yellow below antennæ; a long narrow sclerite between the latter and up the face and which is narrowly margined with yellow; also a convex suture just beneath vertex on the face, which is also yellow. The third tooth of mandible is not broad, merely shorter. The ventral half of abdomen is more or less yellowish and faint cross-stripes are visible above. Postmarginal vein a little longer than the stigmal. The type body has been remounted onto the type slide.

The type has been compared with that of *Achrysocharella olympus* Girault and differs from the latter in having the propodeum short and glabrous at meson and the fore wings are smaller. In *olympus*, the propodeum is distinctly, finely reticulated.

Genus SECODELLA Girault.

The submarginal vein in this genus is broken (statements to contrary notwithstanding). Removed from Elachertini.

1. SECODELLA DIVERSIPENNIS new species.

Female:—Length, about 1.75 mm.

Differs from all the species in having the postmarginal vein a little shorter than the stigmal and the lines of ciliation on the fore wing are less distinct. Dark metallic blue, the abdomen dark æneous green, the abdomen ventrad suffused with brownish. Scape yellowish brown, the proximal three tarsal joints whitish. Funicle joints all somewhat wider than long, the last two a little the longest; pedicel longer than funicle 1.

From one female captured by sweeping in forest, February 16, 1912 (A. M. Lea and A.A.G.).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2505*, Queensland Museum, Brisbane, the specimen on a tag; head and a pair of wings on a slide.

2. SECODELLA PULCHRA ACUMINATA new variety.

Female:—Length, 2.75 mm., excluding ovipositor which is extruded for a third the length of the abdomen.

Like *pulchra* Girault but the abdomen still longer. In both there is a distinct stylus from apex of the abdomen which is not quite as long as the extruded portion of the ovipositor. In *lineata*, this stylus is very short and the ovipositor valves are very slightly extruded (same in *rufiscapus*, *diversipennis* and *ænea*).

From one female captured November 19, 1913 (H. Hacker).

Habitat: Brisbane, Queensland.

Type: No. *Hy 2506*, Queensland Museum, Brisbane, the specimen on a tag.

3. SECODELLA ÆNEA new species of Girault and A. P. Dodd.

Female:—Length, 2.60 mm.

Like *lineata* Girault but the first joint of the funicle is longest, one third longer than wide, 2-4 gradually shortening, 4 plainly wider than long. Abdomen a little longer than the head and thorax united.

From one female captured by sweeping in forest, July 24, 1913 (A.A.G.).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2507*, Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

OMPHALOMORPHELLA new genus of Girault and A. P. Dodd.

Like *Omphalomorpha* but the mandibles bidentate, the fore wings densely and normally ciliate, the ring-joints large and distinct, the postmarginal vein very long and slender, somewhat longer than the marginal, over twice the length of the long stigmal. Pedicel elongate. Marginal vein somewhat over half the length of the submarginal which is distinctly broken. Propodeum with a ridge-like median carina. Abdomen depressed, from dorsal aspect rounded-ovate. The male is the same but the abdomen with straight lateral margins, longer than wide.

1. OMPHALOMORPHELLA AURIPES Girault. Male, female. Genotype.

Length, 2.70 mm.

Bright æneous green, the wings lightly stained throughout, the coxæ concolorous, the legs rich golden yellow, also the scape except above at tip; rest of antenna black. Pedicel nearly as long as the next four joints taken together, about twice the length of either joint 3 or 4 of funicle which are largest but distinctly wider than long; scape slender. Hind femur

compressed. Head and thorax very densely, finely polygonally scaly or shagreened, the thorax with some scattered thimble punctures. A line of foveæ across cephalic edge of propodeum, the latter shining but with faint scale-like sculpture which is not quite as distinct as that of the abdomen.

Habitat: Melbourne, Victoria. Galls on *Eucalyptus*. Four males, six females, September 11.[4]

Type: In the National Museum, Melbourne, two pairs on a card, a slide with a male antenna and female head, wings and hind legs.

2. OMPHALOMORPHELLA BICOLOR new species.

Female:—Length, 0.80 mm.

Anteunæ inserted a little below the middle of the face, 11-jointed with two ring-joints, the club 3-jointed and with a distinct terminal spine, the flagellum rather strongly clavate, the second ring-joint very large, nearly as large as funicle 1 yet distinctly shorter; first ring-joint very short. Mandibles with two equal acute teeth, small. Scutellum simple. Propodeum with a median carina but no others, short at meson, finely scaly. Thorax polygonally reticulated, the lines indented. Marginal vein longer than in the genotype, a little longer than the submarginal (not distinctly shorter as in *auripes*), distinctly longer than the elongate post-marginal which is twice the length of the stigmal. Hind tibial spur single, small.

Black, the wings subhyaline, the abdomen yellowish brown, pale yellow across base and with about five obscure dusky cross-stripes. Legs concolorous with abdomen, the coxæ dark, subconcolorous. Tibiæ and tarsi pallid, also the scape; rest of antenna black. Funicles 1 and 2 wider than long, small, 2 a little longer; 3 and 4 each abruptly enlarging, 4 large and globular, yet a little shorter than the pedicel; 3 distinctly wider than long. Funicle 3 twice the size of 1.

From one female captured in jungle, November 15, 1913 (A. P. Dodd).

Habitat: Harvey's Creek (Cairns), Queensland.

Type: No. *Hy 3508*, Queensland Museum, Brisbane, the specimen on a tag; head and hind tibiæ on a slide.

Genus OMPHALOMOMYIA Girault.

The genus bears *four* ring-joints.

1. OMPHALOMOMYIA LIVIDICAPUT Girault.

A female, forest, Gordonvale, Queensland, May 8, 1914. Second ring-joint of the four very short, the others rather large. Funicle 3 at least half the length of the long pedicel, 1 somewhat longer than wide. In this second female the parapsides were not washed with purple. Propodeum scaly, with a carina just laterad of the spiracle. Wings subhyaline. Type re-examined but not the type antennæ.

Genus CHRYSOCHARIS Foerster.

1. CHRYSOCHARIS DUMASI new species.

Female:—Length, about 1.30 mm.

Very similar to *Achrysocharoides sarcophagus* Girault except that the scutellum is simple and the hind femur and proximal half of hind tibia are concolorous with the body, the fore femur and tibia slightly washed with dusky. The scape is wholly concolorous and as deeply colored as the rest of the antenna. Hind wing short, acutely pointed. Marginal fringes of the fore wing short. Funicle 3 barely longer than the pedicel, a little the shortest, 1 broad, a little the longest of the funicle; club 2-jointed. Hind wing where widest (apex of

[4] Labels indefinite. The numbers were *64* and *7*. The dates were *9.11* and *4.11* which may mean November 4 and 9, September 11 and April 11 or September and April, 1911.

venation) with about seven lines of discal cilia, the caudal marginal cilia much longer than the marginal cilia of the fore wing but much shorter than the greatest width of the hind wing. Mandibles bidentate but a third minute tooth is indicated within but is much shorter. Post-marginal vein a little shorter than stigmal. One ring-joint. Parapsidal furrows complete.

From one female captured by sweeping in forest, January 7, 1913.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2509*, Queensland Museum, Brisbane, the specimen on a slide.

Dedicated to Alexandre Dumas, père.

CHRYSOCHARELLA nomen nudum.

This genus heretofore has been poorly characterised. Its antennæ are rather short, subcompressed, clavate, the club casually appearing 4-jointed, since the second funicle joint is more or less closely attached to the club. In the genotype, the parapsidal furrows are only cephalad, the axillæ advanced but not very much so. The shape of the antennal flagellum is the characteristic of the genus. See *antea*, p. 169. Later, I find the group the same as *Achrysocharella* through connecting forms. See *Achrysocharella*.

1. CHRYSOCHARELLA PULCHRA new species. Referred to *Neochrysocharella* Dodd.

Length, about 1 mm. Abdomen finely scaly like the thorax. Fore wings broad, pyriform. *Antea*, p. 169. The parapsidal furrows are distinct only for a short distance cephalad. Type re-examined.

Described from one female captured July 14, 1912. Type specimen on a tag, the head on a slide.

2. ACHRYSOCHARELLA NIVEIPES new species.

Female:—Length, 0.80 mm.

Dark metallic green, the antennæ and legs silvery white; last club joint dusky; fore wing with an obscure stain from the stigmal knob. Coxæ white, the hind one partly metallic outwardly. Terminal spur of club distinct; funicle joint 1 shorter than the pedicel; next two joints wider than long. Body uniformly sculptured, scaly. Mandibles bidentate.

Male:—Unknown.

Described from two females captured in forest, November 1, 1913 and from a window, December 25, 1913.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2510*, Queensland Museum, Brisbane, the first specimen on a slide.

3. ACHRYSOCHARELLA ASHMEADI new species.

Female:—Length, 0.75 mm.

Similar in most respects to *niveipes*, but the mark on the fore wing is more distinct, being a suffused dusky cross-stripe from the stigmal vein and distal part of marginal (in *niveipes* an obscure patch from the stigmal vein), those wings are distinctly narrower with longer marginal fringes (about 14 lines of discal cilia where broadest, the longest marginal cilia nearly a third of the greatest width; in *niveipes* about 19 lines, the longest marginal cilia about a fourth the greatest width). The funicle joint 1 is subquadrate. Very distinct from *Neochrysocharella fasciatipennis* which bears a distinct wing marking, the fore wings broad, with about 30 lines of discal cilia, the marginal cilia short, not a ninth of the greatest wing width. Besides, the legs in that species are distinctly colored, also the antennæ. The hind wings in *fasciatipennis* are twice or more the size of those in *ashmeadi*. Mandibles bidentate.

From one female captured in forest, January 7, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2511*, Queensland Museum, Brisbane, the specimen on a slide.

4. ACHRYSOCHARELLA ALBIFEMUR new species.

Female:—Length, 1 mm.

Dark æneous green, the wings hyaline, the legs and antennæ white except the coxæ. Funicle 1 cupshaped, the club compressed, with a distinct nipple. Differs from *niveipes* Girault in having the funicle joint 1 cupshaped, longer than wide, not somewhat wider than long as in that species; also the hyaline wings which bear little or no discal ciliation, appearing quite naked. Mandibles bidentate. Marginal fringes normal.

From one female caught by sweeping in forest, January 4, 1913.

Habitat: Capeville (Pentland), Queensland.

Type: No. *Hy 2512*, Queensland Museum, Brisbane, the specimen on a slide.

[5] **5. CHRYSOCHARELLA FASCIATIPENNIS** Girault is referred to

Neochrysocharella Dodd.

GENUS ACHRYSOCHAROIDES Girault.

The scutellum in this genus is simple or practically so.

1. ACHRYSOCHAROIDES SARCOPHAGUS (Girault).

This species is associated with *Asympiesiella nelsonensis* Girault and *Mestocharoideus cyaneus* (Girault) in galls on a forest bush. Postmarginal vein a third longer than the stigmal. Marginal cilia of fore wing short. Eyes pubescent. Body polygonally reticulated, the vertex nearly smooth. Distal club joint with a terminal spine. Propodeum smooth, noncarinate, the spiracle small. Length, 1.35 mm. December.

"Several specimens reared in February with *Asympiesiella nelsonensis*. Hyperparasite. The scape is white. The conspicuous fovea mentioned as being on the scutellum is an irregular circular depression formed of five contiguous punctures. There is a similar depression formed by three punctures at distal two thirds of scutum and directly cephalad of the depression on the scutellum and in a line with it."—A. P. Dodd.

The depression on scutellum is nearer to the meson than the isolated seta caudad.

1. ACHRYSOCHAROIDES PULCHELLUS new species.

Female:—Length, 0.65 mm.

Scutellum simple; stigmal vein as long as the postmarginal. Wings hyaline. Brilliant metallic green, the clypeal region, scape, legs, all except dorsal part of pedicel, sides of thorax (except centrally) and abdomen, lemon yellow, the abdomen at distal half with more or less distinct cross-stripes of metallic green (dorsad). Thorax polygonally reticulated, the lines not raised. Mandibles tridentate, the teeth acute. Funicle and club black; funicle 1 a little the longest of the three, one and two thirds times longer than its width, longer than the pedicel. Second club joint terminating in a long spine, the club joints nearly as long as those of the funicle. Parapsidal furrows complete.

Male:—Unknown.

Described from one female captured by sweeping in the forest, July 1, 1913 (A.P.D.).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2513*, Queensland Museum, Brisbane, the foregoing female on a tag, the head on a slide.

[5] *See* a few pages beyond for other species.

GENUS ACHRYSOCHARIS Girault.

Differs from *Closterocerus* Westwood in having filiform antennæ; funicle 2-jointed, club 3-jointed; wings usually hyaline. Similar to *Chrysocharis* Foerster but the postmarginal vein slightly shorter than the stigmal and the club is 3-jointed. Third club joint terminating in a spine-like seta; pedicel subequal to or longer than the moderately long cylindrical funicle joints, the single ring-joint minute. Parapsidal furrows distinct only for cephalic two thirds, sometimes complete. Propodeum very short, its spiracle minute, round, the carinæ absent. Yellow marked with brilliant metallic green or all green. Abdomen long conic-ovate, pointed.

1. ACHRYSOCHARIS MAGNIFICA Girault. Female. Genotype.

Length, 1.75 mm.

Pale cadmium yellow marked with deep metallic green as follows:—Head except face ventrad of the antennal bulbs; pronotum, all of mesoscutum except latero-caudal halves of each parapside, base of abdomen in the dorsal aspect, the propodeum except laterad, a narrow line down the median line of the scutellum for about proximal two thirds and the cephalic third of the axillæ. A dark round spot dorsal aspect on each side of the abdomen about the middle, the space between them darkened (across the meson). Tip of abdomen dusky. Scape pale, the antennæ yellow. Legs whitish, including the coxæ. Body densely polygonally reticulated, the mesoscutum more roughly, being almost punctate. A more or less obscure brownish area laterad of the scutellum, cephalad of propodeal spiracle. Pedicel subequal in length to proximal funicle joint, proximal club joint distinctly longer than wide. Tip of ovipositor valves black.

Captured December 3, 1912, Gordonvale, Queensland.

Type: A female on a tag (minus head).

Proximal club joint distinctly longer than wide, not as originally stated. For the variety *varicolor*, see later.

2. ACHRYSOCHARIS PULCHRA Girault.

Length, 1.90 mm.

Like the typical species but the metallic green on the scutellum does not form a straight line down the median line but is much broader and ovate in shape, variable in size; the metallic green stripe across the base of abdomen is longer and the tip of the abdomen dark metallic. Moreover, the pedicel is longer, longer than the proximal funicle joint, the proximal club joint shorter but still longer than wide. Same color pattern as *magnifica*. Hind wings with about 10 lines of discal cilia, broad.

Captured with *magnifica*.

Habitat: Gordonvale (Cairns), Queensland.

Types: Two females on tags.

3. ACHRYSOCHARIS GRANDIS Girault. Female.

Length, 2 mm.

Like *pulchra* but whole thorax metallic green; abdomen only slightly so at extreme tip; somewhat distad of middle there is a round dot near each lateral margin. Like the other two species. Fore wings very broad, pyriform, the apex subtruncate but not differing from those of the others.

Captured September 3, 1912.

The metallic green median line of scutellum is as in the genotype and is outlined by being shiny and coarsely scaly, the rest of the scutellum opaque and nearly smooth.

Type: A female on a slide.

4. ACHRYSOCHARIS MACULATIPENNIS Girault.

Length, 1.20 mm.

Wholly metallic green and punctate including most of the abdomen; propodeum blue; legs white, the coxæ darker; antennæ dusky yellowish, pedicel over twice the length of funicle 1, which is subglobate; wings hyaline but in the fore wing there is a subelliptical stained area from the knob of the stigmal vein. Like the other species but with no yellow on the body and the abdomen shorter, wings less broad, more rounded at apex and moderately coarsely ciliated. The stigmal vein is longer. Posterior femur more or less dusky. Second funicle joint nearly twice the size of first but shorter than the pedicel which is long and obconic.

Captured September 3, 1913.

Type: A female with type of *grandis*.

5. ACHRYSOCHARIS BIFASCIATUS Girault.

Length, 0.85 mm.

Golden yellow; pronotum and cephalic half of scutum, metallic green; propodeum, a spot in center of scutellum, one across apex of each axilla, a smaller, round dot on each axilla caudad of middle, near the scutellum, dusky, while two adjacent stripes across about the middle of the abdomen, black; apex of each parapside metallic green; tips of ovipositor valves black; fore wing with an obscure broad clouded stripe across it from about the stigmal vein. First funicle joint subequal to the pedicel, funicle 2 longest of the flagellum, the first club not much shorter than it.

Captured May 11, 1913.

Habitat: Gordonvale (Cairns), Queensland.

Type: A female on a slide.

6. ACHRYSOCHARIS LEIBNITZI Girault.

Length, 0.85 mm.

Like *Closterocerus saintpierrei* but at once distinguished because the antennæ are not compressed fusiform, the legs are white except blackish coxæ; wings unifasciate, the fascia only about half complete (from stigmal knob). Pedicel longer than any of the following joints, those of funicle ovate. Antennæ black. Mandibles tridentate.

Type: A female on a slide.

7. ACHRYSOCHARIS TRIFASCIATA Girault.

One female, Cooktown, Queensland, forest, March 1, 1914 (A. P. Dodd); a female, Gordonvale, Queensland, April 9, 1914.

8. ACHRYSOCHARIS QUINQUEDENTATA new species.

Female:—Length, 0.90 mm.

Dark metallic blue, the legs (except caudal coxæ and femora), scape and pedicel white, rest of antennæ dusky pallid. Thorax scaly reticulate, the propodeum glabrous, noncarinate; abdomen with a short, white petiole. Fore wings slender, hyaline, unique in that they bear a conspicuous, rather broad black stripe across from about *proximal half* of marginal vein and the marginal cilia are about a third of the greatest wing width. Distal tarsal joint subelongate. Mandibles with three large, somewhat spreading, outer teeth and two minute inner ones. Flagellum tapering, the two funicle joints subequal, longest, distinctly longer than the stout pedicel; first club joint barely shorter than the preceding joint, 3 subequal to the pedicel, with a distinct, rather long terminal spine. Flagellum with scattered

long hairs from pustules (in a whorl proximad on funicle 1). Caudal wings acuminate, with only about four lines of sparse discal cilia, the caudal marginal cilia nearly as long as those of the fore wing. Parapsidal furrows complete. Funicle 1 somewhat over twice longer than wide.

From one female captured in jungle, June 3, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2514*, Queensland Museum, Brisbane, the specimen on a slide.

9. ACHRYSOCHARIS CLARISCUTELLUM OCCIDENTALIS new variety.

Female:—Length, 1 mm.

Similar to the typical form with the type of which I have compared it but smaller, the scutellum less sculptured, the sculpture distinct only around the lateral margins narrowly (not broadly distinct there as in the type form), the fore wings bear about six lines less of discal cilia and the two funicle joints are shorter, only slightly longer than wide. Otherwise the same. In both forms, the scape is white for a little over proximal half.

From one female captured in forest, April 14, 1914 (A. P. Dodd).

Habitat: Cloncurry, Queensland.

Type: No. *Hy 2515*, Queensland Museum, Brisbane, the specimen on a slide.

10. ACHRYSOCHARIS ATRIPES new species.

Female:—Length, 1.25 mm.

Very similar to the type specimen of *nigripes* but differing markedly in the wings as follows: The fore wings are slenderer, their discal ciliation less dense (only about 17 lines across the widest part; in *nigripes* about double that number), the stigmal vein shorter; the hind wings are acutely pointed, obtusely so in *nigripes*. The cephalic tibia is yellowish at distal half. Marginal vein longer than the submarginal in both species. The antennæ in *atripes* are somewhat more compact than in *nigripes*. Abdomen conic-ovate, longer than the rest of the body. Scape curved, all of antenna concolorous, the mandibles tridentate.

Male:—Unknown.

Described from one female captured by sweeping in forest, December 4, 1913.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 3459*, Queensland Museum, Brisbane, the above specimen on a slide.

11. ACHRYSOCHARIS VARICOLOR Girault.

Achrysocharis magnifica varicolor Girault.

Female:—Length, 1.75 mm. Abdomen pointed conic, longer than the rest of the body.

Like *magnifica* Girault but the scutellum and axillæ without metallic green, also the propodeum. Extreme tip of abdomen slightly colored and the base of abdomen with a narrow cross-stripe of metallic (a half or more shorter than in *pulchra* for instance, or in *magnifica*). The general coloration is very pale yellow.

Male:—Unknown.

Described from four females reared from cecidomyiid galls on *Careya australis*, December, 1912 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Types: No. *Hy 3459*, Queensland Museum, Brisbane, three of the foregoing females on a tag together.

12. ACHRYSOCHARIS MAYRI new species.

Female:—Length, 1.20 mm.

Like *magnifica* but smaller and the axillæ and the propodeum (except at immediate meson) are yellow; the meson of scutellum is metallic only to middle from base and the tip of the abdomen is somewhat more broadly metallic but not as much as with *pulchra*. Funicle 2 longer than 1 which is subequal to the pedicel. Mandibles with a weak third tooth. Hind wings with a half dozen lines of discal cilia where widest. Fore wings subtruncate at apex. Scutum roughly scaly. Parapsidal furrows about half complete. Green stripe across base of abdomen distinctly abbreviated laterad. Two marginal spots of abdomen more obscurely joined.

From one female labelled "10.10.13. Sweeping forest. G. F. Hill."

Habitat: Port Darwin, Northern Territory.

Type: No. *Hy 2516*, Queensland Museum, Brisbane, the specimen on a slide.

Dedicated to Gustav Mayr.

13. ACHRYSOCHARIS NOVIMACULATIPENNIS new species.

Female:—Length, 0.80 mm.

Exactly similar to *maculatipennis* except that the spot on the fore wing extends all the way across the blade and all the femora are dusky, also the tibiæ just below the knees. The first club joint is a little shorter while the second funicle joint is subquadrate. Mandibles tridentate, the third tooth much shorter than the other two.

From one female captured by sweeping edges of jungle, January 15, 1914 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2517*, Queensland Museum, Brisbane, the specimen on a slide.

This species differs from *Achrysocharella dubia* Girault in having the cross-stripe of fore wing uniform, not accented under the stigmal vein and the fore wings are narrower.

14. ACHRYSOCHARIS ZAOMMOMOMORPHA new species.

Female:—Length, 1.80 mm.

With the habitus of *Zaommomyiella*. Dark metallic blue green, the abdomen dull brown except within broadly across base, the wings hyaline, the legs (except coxæ) and scape, pallid dusky. Rest of antenna black. Pedicel longer than any of the following joints. Funicle 1 shortest of the flagellum (except distal club joint), about half the length of the pedicel, longer than wide; funicle 2 and club 1 subequal, much longer than wide, each a fourth shorter than the pedicel. Club 3 with its body conic-ovate and subequal in length to the terminal spine which is prominent. Scape dusky toward tip. Mandibles short, tridentate, the two inner teeth paired, shallowly separated, the outer tooth stouter and deeply, broadly separated from the others. Parapsidal furrows complete. Pronotum mesad glabrous rather broadly. Scutum coarsely reticulated, the lines raised; scutellum finer, mesad with the lines longitudinal, there the polygons elongate. Propodeum subglabrous, with a short neck which is brown and several irregular carinæ along the meson (a pair of separated median carinæ and a half carina from caudad laterad of these, apparently). Apex of scutellum mesad smooth. Postmarginal vein longer than the short stigmal, the marginal very long, the fore wings very broad. Abdomen conic-ovate, longer than the rest of the body, its proximal fifth dark metallic green. Axillæ barely advanced. Caudo-mesal corner of each parapside glabrous broadly. Propodeum with a semicircular half lateral carina from caudad and a complete sulcus just laterad of spiracle.

Allied with *grandis* but the abdomen is much darker and differently colored, the postmarginal vein is longer than the stigmal, the terminal spine of antennæ is longer, the fore wings more rounded at apex, the head wholly concolorous.

From two females captured by sweeping virgin jungle, December 31, 1911.

Habitat: Malanda, Queensland.

Type: No. *Hy 2518*, Queensland Museum, Brisbane, one of the specimens on a tag, the head on a slide.

15. ACHRYSOCHARIS LONGUS new species.

Female:—Length, 1.65 mm. With the habitus of *Zaomommyiella*. Characterized by having the abdomen conical, somewhat longer than the rest of the body.

Dark brassy green, the abdomen very dark blue, lighter at base, the wings hyaline; knees, tibiæ and tarsi and the terminal spine of club, white. Parapsidal furrows curving off laterad before reaching pronotum. Mandibles with three acute teeth. First ring-joint white. Pedicel subequal to funicle 1 which is a little longer than 2, the latter oval, a little longer than wide; terminal spine of club as long as club 3. Scape wholly black, also distal tarsal joint. Whole body finely, densely scaly. Propodeum without true carinæ, short at the mesou. Postmarginal vein a little shorter than the stigmal, the marginal very long. Fore wings broad, subtruncate at apex.

From one female caught in a mangrove swamp, May 14, 1914 (A. P. Dodd).

Habitat: Chindera (Tweed River), New South Wales.

Type: No. *Hy 2519*, Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

GENUS ACHRYSOCHARELLA Girault.

The species grouped under the naked name *Chrysocharella* belong here.

1. ACHRYSOCHARELLA ÆNEA Girault.

Genotype of *Neochrysocharella* described later. Preoccupied by *Chrysocharella ænea*. *A. ænea* is *A. ænella* new name.

2. ACHRYSOCHARELLA PULCHRELLA new species.

Female:—Length, 2.10 mm. Long, the abdomen nearly twice the length of the thorax. Probably referable to *Neochrysocharella*.

Very similar to *Achrysocharis pulchra* Girault but the scutellum is all metallic green except the lateral and distal margins and only the caudal third of each parapside is orange yellow. Also the dorsal aspect of each axilla is metallic green and the central spot on dorsal abdomen forms a second cross-stripe (in *pulchra* and *magnifica* the spot is not large and the stripe proximad of it more obscure but it seems to be present constantly). Apex of abdomen more broadly black or dark metallic (about distal fifth). Propodeum dark metallic green. Legs and scape white. A rather broad dark metallic stripe down venter of abdomen on each side of median line and there are various metallic markings on thoracic venter. Scutum coarsely scaly, scutellum finely, longitudinally lineolated, propodeum smooth, noncarinate, scaly laterad of spiracle. Axillæ advanced. Parapsidal furrows half complete from cephalo-lateral angle of scutum. Mandibles bidentate. Distal third of scape and flagellum dusky black. Pedicel slightly longer than funicle 2 which is longest of the funicle and club, nearing twice longer than wide. Club 1 somewhat longer than funicle 1, all club joints longer than wide. Terminal spine distinct.

From one female caught in forest uplands, May 3, 1914 (A. P. Dodd).

Habitat: Tweed Heads (Tweed River), New South Wales.

Type: No. *Hy 2520*, Queensland Museum, Brisbane, the female on a tag; head on a slide with type *Achrysocharis quinquedentatus* Girault.

3. ACHRYSOCHARELLA MACKAYENSIS new species.

Female:—Length, 0.80 mm.

Æneous green, bright, the wings hyaline, the legs white except coxæ which are more or less metallic; antennæ dusky yellow, the funicle joints quadrate, 1 a little longer, the pedicel a little longer than funicle 1; terminal spine of club distinct. Mandibles tridentate. Pedicel dusky, the scapo white. Closest to *olympus* but the antennæ are lighter in color, the funicle joints distinctly shorter, the postmarginal vein is as long as the stigmal (distinctly shorter in *olympus*) and the fore wings are distinctly smaller. Propodeum without a median carina in both species.

Male:—Not known.

Described from one female taken by sweeping lantana and other vegetation in a field near town, October 21, 1911.

Habitat: Mackay, Queensland.

Type: No. *Hy 2521*, Queensland Museum, Brisbane, the above specimen on a tag, the head on a slide.

4. ACHRYSOCHARELLA QUINQUEFASCIATA new species.

Female:—Length, 1.10 mm.

Dark æneous, the wings hyaline, the legs and abdomen pale yellow, the latter with about five brownish black stripes across between base and apex, the latter also dusky. Postmarginal vein somewhat longer than the stigmal, long. Thorax finely, polygonally lined. Abdomen longer than the rest of the body, conic-ovate. Hind coxa metallic laterad. Mandibles long and slender, as in *Paromphale flavicorpus*. Marginal vein somewhat longer than the submarginal. Fore wing where widest with about 20 lines of discal cilia. Scape and pedicel pale, the latter somewhat dusky above; rest of antenna sooty. Funicle 1 largest, longest and widest, distinctly longer than the pedicel, about one and a half times longer than wide; pedicel next longest of the flagellum, a little wider than funicle 1, a little longer than funicle 2, which is a little longer than club 1; the latter a fourth longer than wide and subequal to club 2; terminal spine distinct.

Male:—Not known.

Described from one female taken by sweeping in jungle (500 feet), February 5, 1912.

Habitat: Normanby (Cooktown), Queensland.

Type: No. *Hy 2522*, Queensland Museum, Brisbane, the fore-described female on a slide.

5. ACHRYSOCHARELLA AURICORPUS new species of Girault and A. P. Dodd.

Female:—Length, 0.85 mm.

Deep golden yellow, the wings hyaline, the body unmarked save extreme tip of abdomen and caudal margin of propodeum at meson; legs and venation pale. Mandibles tridentate. Antennæ dusky pallid, the terminal spur distinct, the second funicle joint quadrate, somewhat shorter than the first.

Male:—Not known.

Described from one female captured by sweeping in forest, December 10, 1913 (A.A.G.).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2523*, Queensland Museum, Brisbane, the above specimen on a slide.

6. ACHRYSOCHARELLA MULTIDENTATA new species.

Female:—Length, 1.15 mm. Slender. Characterized by bearing 5-dentate mandibles, the three inner teeth small.

Orange yellow, the vertex and proximal third of abdomen dark metallic blue; rest of abdomen except a small whitish area across just before apex, metallic coppery. Legs and scape orange yellow; rest of antennæ black. Dorsal thorax washed with metallic cyaneus,

the scutellum and postscutellum metallic cyaneus. Scutum with four long, black bristles, one in each corner, the scutellum with two, one on each side near lateral margin about center from base. Thorax coarsely scaly reticulate. Fore wings hyaline but with a distinct, broad, blackish stripe across from a little over distal third of marginal vein and the whole of the proximal side of the stigmal. Propodeum glabrous, washed with metallic blue, without carinæ. Abdomen with a short yellow petiole, slender, acute at apex, somewhat longer than the thorax. Postmarginal vein slightly shorter than the stigmal. Marginal fringes of fore wing where longest a little less than a fourth the greatest wing width. Marginal vein along cephalic margin with long, slender bristles. Cheeks short but distinct. Flagellum tapering, the funicle joints stout, somewhat longer than wide, 2 a little longer than 1; terminal spine distinct, rather long. Pedicel a little shorter than funicle 1. Axillæ not advanced. Caudal marginal cilia of hind wing somewhat shorter than the greatest width of the blade yet moderate in length. Fore wings with about 20, caudal wings with about 6 lines of discal cilia where widest. Club joints 1 and 2 each twice longer than wide, longest of the flagellum.

From one female captured by sweeping in jungle, May 30, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2524*, Queensland Museum, Brisbane, the specimen on a tag.

7. ACHRYSOCHARELLA GLABRISCUTELLUM new species.

Female:—Length, 1.30 mm.

Like *Achrysocharis clariscutellum occidentalis* but larger and the antennæ and wings as in the typical form of that variety. Venation yellow; the stigmal vein black and with a fuscous dash from its apex. Pedicel very long, as long as the funicle. Agrees in every particular with *clariscutellum clariscutellum* except the sculpture of the scutellum and the generic character. Scutum finely punctate. Compared with type of *clariscutellum clariscutellum* whose antennæ bear but one ring-joint. Legs white except coxæ. Probably a variety of *clariscutellum* (if so that species belongs here).

From one female caught in forest, June, 1914 (A. P. Dodd).

Habitat: Burnett Heads, Southern Queensland.

Type: No. *Hy 2525*, Queensland Museum, Brisbane, the specimen on a slide.

8. ACHRYSOCHARELLA VARICLAVA new species.

Female:—Length, 0.80 mm.

Differing from *dubia* in the following particulars only: The distal two club joints are black (the distal joint in *dubia*), the posterior wings are narrower, with only five lines of discal cilia where widest (seven in *dubia*) and the fore wings are more slender, about 20 lines of cilia where widest (about 26 in *dubia*). Also the caudal coxæ are entirely concolorous and the caudal femur bears a distinct blackish blotch dorsad at proximal third. Compared with type of *dubia*.

From one female caught in forest, May 12, 1914 (A. P. Dodd).

Habitat: Chindera, New South Wales.

Type: No. *Hy 2526*, Queensland Museum, Brisbane, the specimen on a slide.

Chrysocharella æneca differs from *Chrysocharella consobrinus* in having the first two pairs of tibiæ yellowish white, the scape blackish only at tip and otherwise as described. Cephalic tibiæ yellow in *consobrinus*, the middle tibiæ so at distal half. In its original description, line 4, *more yellowish* should read *less yellowish*. The species *æneca* differs from *Achrysocharis atripes* in that the latter has the scape all concolorous, the antennæ distinctly less compact, both funicle joints not wider than long, the first smaller than the second as in *æneca*; the stigmal vein in *atripes* is distinctly shorter, subsessile, the postmarginal barely developed; the

wings in *atripes* also distinctly narrower and the legs differ in color. The species *consobrinus* differs from *atripes* much as does *æneu*. In *atripes*, the mandibles are bidentate.

Chrysocharella nivcipes differs markedly from *Achrysocharis maculatipennis* in the compact antennæ, funicles 1 and 2 subequal, distinctly wider than long. In *C. fasciatipennis*, the first two pairs of legs are all white or practically so except coxæ.

Achrysocharella dubia has broad fore wings with short marginal fringes (about 30 lines of discal cilia), the hind coxæ are white except at base, the pedicel above dusky. Funicle 1 quadrate, 2 somewhat longer than wide. Mandibles tridentate. Pedicel longest of the flagellum.

CHRYSOCHAROMYIA new genus of A. P. Dodd.

Like *Achrysocharoides* Girault but the antennæ with three ring-joints.

Type: The following species (*clongata*).

1. CHRYSOCHAROMYIA ELONGATA new species.

Female:—Length, 1.75 mm. Long and slender.

Brilliant metallic coppery green; abdomen golden yellow, green at its base laterad and with five dusky cross-stripes across from basal fifth to two thirds the length, the first and last stripes partly obliterated; tip of abdomen black; eyes garnet; legs and antennal scape very pale yellow, the pedicel darker, rest of antennæ black. Mandibles tridentate, the teeth acute. Funicle 1 longer than pedicel, 3 barely two thirds the length of 1; club a little longer than funicle 1; first club joint as long as preceding joint, a little longer than the second; flagellum with rather sparse, long thin hairs. Wings hyaline, scarcely reaching apex of abdomen; venation yellow, the postmarginal vein somewhat longer than the stigmal. Abdomen conic-ovate, elongate, fully twice as long as the thorax. Thorax with fine scaly reticulation, the lines not raised, the propodeum smooth, with a short median carina.

From one female captured by sweeping in forest, January 27, 1913.

Habitat: Magnetic Island (near Townsville), Queensland.

Type: No. *Hy 2527*, Queensland Museum, Brisbane, the female on a tag, the head on a slide.

Later, a female from Brisbane, March 10, 1913 (H. Hacker).

2. CHRYSOCHAROMYIA MANDIBULARIS new species.

Female:—Length, 1.15 mm. Slender.

Dark metallic green, the legs, abdomen and scape pale yellow, the abdomen washed lightly with metallic, which forms about four subdusky cross-stripes. The valves of ovipositor metallic and tip of abdomen. Antennæ with funicle 1 a little shorter and stouter than 2 which is one and two third times longer than its width, much longer than the pedicel which is subequal to the slender third club joint whose terminal seta is distinctly shorter than itself; club 1 a little longer than 2, subequal to funicle 1 but slenderer, the body of club 3 distinctly shorter than club 1. Mandibles 7-dentate, the four inner teeth comblike. Postmarginal vein elongate, nearly twice the length of the moderate stigmal, the marginal very long, the submarginal distinctly broken. Flagellum black. Scutellum except along the meson and caudad, the propodeum and the axillæ suffused with brown. Parapsidal furrows apparently but half complete from caudad. Sculpture, fine polygons. Propodeum with a faint median carina, subglabrous. Fore wings with a more or less rounded stain under stigmal vein and distal end of marginal. Abdomen with a short petiole.

From one female captured in jungle, January 17, 1914 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2528*, Queensland Museum, Brisbane, the female on a tag, head on a slide.

3. CHRYSOCHAROMYIA DODDI new species.

Female:—Length, 1.10 mm.

Dark metallic purple, the wings hyaline, the abdomen, legs and antennæ pale honey yellow, the abdomen with four pairs of purplish marginal dots, the fifth pair subobsolete, the dots from base to distal two thirds. Thorax scaly reticulate, the lines not raised, the parapsidal furrows complete, distinct; scutum with a small fovea at meson of caudal margin. Postmarginal vein much longer than the stigmal. Abdomen subpetiolate. Mandibles distinctly tridentate. Funicle joints all somewhat longer than the pedicel, 2 a little the longest, about twice its own width, 1 wider than it; the two club joints a little shorter than the funicle joints. Tip of ovipositor black.

From one female captured in jungle. Named for A. P. Dodd.

Habitat: Gordonvale, Queensland.

Type: No. *Hy 2529*, Queensland Museum, Brisbane, the female on a slide with type of *Chrysocharella albifemur* Girault.

4. CHRYSOCHAROMYIA CYANEICORPUS new species.

Female:—Length, 1.58 mm.

Dark metallic blue with greenish reflections, the fore wings uniformly, moderately lightly embrowned from proximal third of marginal vein to apex; legs yellowish brown except cephalic coxa, which is concolorous. Scape and pedicel colored like the legs but rest of antennæ black. Pedicel a little dusky, distinctly much shorter than any of the funicle joints which are long, subequal, each about thrice or more longer than wide, longer than the club joints; club with a distinct, conspicuous terminal seta; flagellum tapering. Mandibles 6-dentate, tridentate in the usual way, then with three comb-like teeth along the mesal oblique truncation of the third tooth. Base of abdomen brilliant green. Face gently wrinkled; vertex polished; thorax scaly reticulated, the scutellum with a more or less distinct median sulcus at proximal fourth. Propodeum faintly scaly, abdomen a little more plainly so. Parapsidal furrows extremely narrow at cephalic fourth, otherwise normal, complete, deep. Abdomen with a transverse petiole which is yellow, the second segment occupying only a fifth of the surface. Axillæ only slightly advanced. Propodeum bicarinate, the median carina absent. Postmarginal vein somewhat longer than the stigmal, the latter short.

From one female caught with *doddi*.

Habitat: Gordonvale, Queensland.

Type: No. *Hy 2530*, Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

5. CHRYSOCHAROMYIA INÆREA new species.

Female:—Length, 1.10 mm.

Bright golden yellow, the wings hyaline; funicle 1 dusky, club dusky black. Abdomen patterned with black dorsad as follows: Two short dusky transverse dashes across meson just out from base, side by side, followed at regular intervals by two narrow complete black cross-bands, each with a short transverse dash at meson just caudad; then at the next interval (at about distal two thirds) two short dashes across meson side by side (that is near together, cephalo-caudad); then a complete cross-stripe without a dash caudad of it; this distal stripe is at a little over distal three fourths. Tip of valves of ovipositor black. Propodeum with a short median carina. Thorax scaly. Postmarginal vein subequal to stigmal, the marginal long. Mandibles strongly tridentate. Funicle joints short, 1 subequal to pedicel, a little longer than wide, 2 and 3 subquadrate. Club with a short nipple, the first joint longer than the second, subquadrate.

From one female labelled "Forest, 10-10-13. G. F. Hill."

Habitat: Port Darwin, Northern Territory.

Type: No. *Hy 2531*, Queensland Museum, Brisbane, the specimen on a tag, head on a slide.

6. CHRYSOCHAROMYIA VARINOTATA new species.

Female:—Length, 1.60 mm. Allied with *inærea.*

Pale honey or golden yellow, the mesothorax orange yellow, the wings hyaline. Occipital margin of vertex, median line of scutellum broadly and clavately (the narrow end caudad), apex of abdomen and valves of ovipositor, pronotum except a golden round spot at caudal margin at lateral margin, parapsidal furrows and cephalic margin of scutum, axillæ, median line of scutum narrowly and propodeum except at caudal margin near lateral margin, blue-black. Abdomen with five complete cross-stripes of black between base and apex and at the interval of a stripe a short transverse dash across meson between stripes 3 and 4. Propodeum with a short, complete median carina. Mandibles strongly tridentate. Scape pale yellow, dusky black above at proximal two thirds and at tip; rest of antenna black. Vertex subdusky. Funicle 1 thickened and a little longer than 2 or 3, the latter nearly twice longer than wide, somewhat longer than the pedicel. Distal club joint shortest of the flagellum, its terminal spine short, stout, distinct. Thorax scaly. Abdomen slender, conic-ovate.

From one female caught at 1,000 feet, forest, Upper Tweed River, May 17, 1914 (A. P. Dodd).

Habitat: Tweed River, New South Wales.

Type: No. *Hy 2532*, Queensland Museum, Brisbane, the specimen on a tag with type of *inærea*, head on slide with type *Achrysocharella variclava* Girault.

7. CHRYSOCHAROMYIA BICOLORITHORAX new species.

Female:—Length, 1.10 mm.

Agrees with the description of *elongata* Girault, but the face below the antennæ and sides and venter of thorax also golden yellow, the abdomen is shorter, the postmarginal vein shorter, only slightly longer than the stigmal; also funicle 2 is slightly the longest joint of the funicle and the terminal spine of the club is decidedly longer, distinctly over half the length of distal club joint (less than that in *elongata*). The mandibles are smaller. Caudal wings acute, with about five lines of sparse cilia where broadest. Thorax reticulated, the parapsidal furrows complete. Longest marginal fringes of fore wing somewhat less than a fourth of the greatest width, a little shorter than the caudal fringes of the hind wing. Pedicel subequal to funicle 1, which is distinctly longer than wide and a little shorter than either of the first two club joints. Differs from *Achrysocharella quinquefasciata* in bearing distinctly longer marginal fringes on the fore wing, the mandibles, colour of head and thorax, longer terminal spine of club, shorter funicle 1, and so on. Compared with types of the two species mentioned.

From one female captured by sweeping in forest, April 24, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2533*, Queensland Museum, Brisbane, the specimen on a slide.

PSEUDOSECODES new genus of Girault and A. P. Dodd.

Female:—Agreeing with *Secodella* Girault but the propodeum has a short median carina and the antennæ are different. Antennæ 11-jointed, two ring-joints, five distinct funicle joints and a 2-jointed club, the apical joint with a terminal spur. Posterior tibiæ with one spur.

1. PSEUDOSECODES SPLENDIDUS new species. Genotype.

Female:—Length, 3.10 mm.

Dark metallic blue-green, the legs (except the three proximal joints of all the tarsi which are pale straw yellow) concolorous; antennæ concolorous but the scape is reddish.

Propodeum short, scaly. Wings hyaline, the discal ciliation arranged as in *Secodella.* Marginal vein nearly as long as the submarginal, stigmal short, postmarginal two and a half

times the length of stigmal. Pedicel distinctly shorter than funicle 1, 2 distinctly longer than 1, 3 subequal to 2, 4 shorter thau 3, 5 shorter thau 4, subequal to 1 which is about twice as long as wide; club somewhat longer thau funicle 2, the first club joint as long as funicle 5, longer than the second club joint.

From one female captured by sweeping in jungle, October 19, 1913 (A. P. Dodd).

Habitat: Harvey's Creek (Cairns), Queeusland.

Type: No. *Hy 2534,* Queensland Museum, Brisbane, the specimeu ou a tag, the head and posterior legs on a slide.

NEOCHRYSOCHARELLA new genus of A. P. Dodd.

Female:—Like *Achrysocharella* Girault but the parapsidal furrows are incomplete, only barely indicated anteriorly (deep, distinct and complete in *Achrysocharella*) and the propodeum bears a median carina and the axillæ are much advanced.

Type: Achrysocharella œnea Girault.

1. NEOCHRYSOCHARELLA ÆNELLA (Girault).

"Dark metallic green, coxæ concolorous, femora concolorous; tibiæ and tarsi bright golden yellow, also the anteunal scape; rest of antennæ dusky black. Fore wings broad; hyaline, marginal vein longer than the submarginal, stigmal vein short, the postmarginal no longer than the stigmal. Club rather loosely jointed, tapering and with a short terminal spur. Thorax with scaly reticulation, the reticulation in raised lines, the propodeum nearly smooth. Abdomen conic-ovate, somewhat longer and wider than the thorax. Mandibles tridentate, the inner tooth truncate. With the habitus of the Pediobiini and the venation of the Entedonini.

"From a female sweeping in jungle, type locality, January 15, 1914 (A. P. Dodd)."—A. P. Dodd.

Chrysocharella pulchra and *fasciatipennis* belong here and probably *Achrysocharella pulchrella.*

ENCYRTOMPHALE new genus.

Female:—Form small, like a small mirine encyrtid, the abdomen short, acute. Antennæ 8-jointed with a long cylindrical solid club equal in length to the rest of the flagellum; pedicel large, oval, nearly as long as the funicle and much wider; one thick ring-joint which is distinctly narrower than the funicle; four funicle joints of which the first two are like large ring-joints being much wider than long, the distal over twice their length yet still wider thau long. Mandibles bidentate, the inner tooth obtuse. Hind tibial spurs single. Marginal vein short, not twice the length of the stigmal and much shorter than the submarginal, the postmarginal absent. Parapsidal furrows complete, the scutellum simple. Marginal fringes of fore wing rather longer than usual, the discal cilia normal but scattered and like minute dots.

1. ENCYRTOMPHALE PARVULICORPUS new species. Genotype.

Female:—Length, 0.48 mm.

Dark metallic green, the legs (except hind femur and tibiæ broadly at middle and hind coxa), scape and pedicel pale yellow; rest of antenna black. Wings hyaline. Funicle 1 a little shorter than 2, 3 a little shorter than 4. Club without a terminal nipple.

From one female captured by sweeping in forest, January 4, 1913.

Habitat: Capeville (Pentland), Queensland.

Type: No. *Hy 2535,* Queensland Museum, Brisbane, the female on a slide.

PARASECODELLA new genus.

Female:—In my table of genera running to *Omphalomorpha* Girault but differing in having the venation as in the Entedoniui, that is, the marginal vein long and slender (but here no longer than the long submarginal), the postmarginal barely developed, much shorter than the stigmal which is very short, subsessile. Fore wings with distinct normal discal ciliation, which, however, though rather dense, is minute. Propodeum longer, quite as in the Elachertini, the median carina distinct, no others. Funicle filiform, the club enlarged, in relation to the funicle somewhat as in *Polynema* but not quite as enlarged. Otherwise very similar to *Omphalomorpha*. Abdomen conic-ovate but no longer than the rest of the body. Mandibles tridentate. Hind tibial spur single.

1. PARASECODELLA DICKENSI new species. Genotype.

Female:—Length, 1.10 mm.

Deep black with a purplish lustre, the scape except above near tip and first three tarsal joints white; also knees and tips of tibiæ. Thorax (except propodeum) finely polygonally scaly; propodeum smooth, no sculpture; wings hyaline. Pedicel somewhat longer than funicle 1 which is longest, one third longer than wide, funicle 4 shortest, globular oval, a little longer than wide; club with a distinct terminal nipple, the two first joints subquadrate.

From one female captured in forest, February 16, 1912 (A. M. Lea and A.A.G.).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2536*, Queensland Museum, Brisbane, the specimen on a tag; hind leg, a fore wing and a head on a slide.

Dedicated to Charles Dickens.

EPOMPHALE new genus.

Female:—Like *Achrysocharis* Girault but the club is 2-jointed, the antennæ 7-jointed. Marginal vein much longer than the submarginal, the postmarginal barely developed. Form small.

1. EPOMPHALE AURIVENTRIS new species. Genotype.

Female:—Length, 0.70 mm.

Metallic purple, the thorax with very fine sculpture somewhat as in the Tetrastichini, the legs and abdomen golden yellow, the latter with two distinct cross-stripes of black close together at distal third and indications of a third stripe just proximad of the others. Antennæ pallid, without a distinct terminal seta but with several long but colorless lateral apical setæ. Pedicel longer than either funicle joint both of which are distinctly longer than wide but not long, 2 a little longer than 1; club slender, conic ovate, longer than the funicle, divided near middle. Wings hyaline, the fore wing slender (about 15 lines of discal cilia where widest), its marginal cilia moderately long, the longest about a third the greatest wing width or somewhat less. Hind wings acuminate, where widest with about three lines of discal cilia, the caudal marginal fringes a little longer than the longest marginal cilia of the fore wing. Discal cilia of the latter caudo-proximad bounded by a convex line of cilia.

From one female captured by sweeping secondary forest growths, January 8, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2537*, Queensland Museum, Brisbane, the female on a slide.

PAROMPHALE new genus of Girault and A. P. Dodd.

Female:—Like *Achrysocharella* Girault but the anteunal club only 2-jointed, the distal joint formed by a constriction which appears to be nonarticulated; it terminates in a nipple. Mandibles long, nearly twice longer than wide, with three very distinct, acute teeth. Pedicel

stout, subequal to the two funicle joints which are one and a half times longer than wide but shorter than the rather long, proximal joint of the club. Abdomen conic-ovate. Postmarginal vein long and slender, longer than the moderate stigmal. If the constriction of the club is nonarticulated, the antennæ are 6-jointed. Mandibular teeth spreading.

Male:—Not known.

Type: The following species.

1. PAROMPHALE FLAVICORPUS new species.

Female:—Length, 0.85 mm.

Dull honey yellow, the wings hyaline, the abdomen with three distinct cross-stripes of black, the first longest. Thorax reticulated, the lines not raised. Antennæ with scattered, long, fine hairs. Marginal vein longer than the submarginal, the latter distinctly broken. Propodeum with a faint median carina, fuscous. Tip of abdomen black. Fore wings with about twenty-four lines of discal cilia where broadest.

Described from one female captured by sweeping at the base of Pyramid Mountain, forest, February 13, 1912. One antenna bore but a single funicle joint, the club correspondingly longer but otherwise as described (A.A.G.).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 3460*, Queensland Museum, Brisbane, the above specimen on a slide.

CLOSTEROMPHALE new genus of Girault and A. P. Dodd.

Female:—Form slender. Antennæ inserted below the middle of the face, 8-jointed, two ring, four funicle joints, the club solid, not enlarged. Mandibles tridentate. Scutellum simple, the parapsidal furrows complete. Marginal vein longer than the submarginal, the postmarginal and stigmal veins of moderate length, the former longer; marginal vein long; wings infuscated. Abdomen conic-ovate, longer than the rest of the body. Propodeum short at meson, with a weak carina there, the surface reticulated. Hind tibial spur short, single.

Type: The following species.

1. CLOSTEROMPHALE BILINEATA new species.

Female:—Length, 1.05 mm.

Dark metallic green, the abdomen bronze coppery, the head spotted with coppery and the scutum and scutellum with a distinct, rather broad coppery stripe down each side of meson (from pronotum to apex of scutellum). Legs and antennæ concolorous but funicle 3, knees, a band around tibiæ just before tip, the tarsi and both ends of the scape, yellowish white. Thorax densely scaly. Funicle joints subquadrate; club over half the length of the funicle, the pedicel barely longer than the funicle joints taken separately; scape moderately long. Fore wing with two conspicuous blotches of sooty, one from apex of stigmal vein, the other from near base (proximal end) of the marginal, the distal blotch the larger, rounded, extending nearly across the blade, the proximal one more elliptical, also extending nearly across, the space between them suffused with sooty except just under the marginal vein.

Male:—Not known.

Described from one female captured by sweeping in the jungle, December 2, 1913 (A. P. Dodd).

Habitat: Kuranda, Queensland.

Type: No. *Hy 3461*, Queensland Museum, Brisbane, the foregoing female on a tag; hind legs and head on a slide.

GENUS CLOSTEROCERUS Westwood.

1. CLOSTEROCERUS SAINTPIERREI Girault.

Antea, p. 157, line 5 of the description, *two areas* should read *two arms*.

2. CLOSTEROCERUS ZANGWILLI Girault.

Antea, p. 158, line 5 of the description, *margin* should read *apex*.

3. CLOSTEROCERUS WESTWOODI new species.

Female:—Length, 1.30 mm.

Dark metallic green, the abdomen, head and legs dark blue, the tarsi and first two tibiæ whitish. Parapsidal furrows distinct but cephalad near the pronotum turned off rather abruptly laterad not reaching the pronotum. Agrees otherwise with *mirus* but the bands of the fore wing are blacker, the apical one covers nearly the whole of the apical edge of the wing while the proximal blotch is replaced by a distinct loop or hook-shaped black marking which leaves the marginal vein a little distad of its middle, runs a rather short distance disto-caudad and then curves rather sharply at right angles to the caudal margin running diffusely along this proximad over half way to base. Scutellum longer and less rounded at apex than as with *mirus*. Mandibles tridentate. First two tibiæ dusky just below knees.

From one female caught in jungle, May 2, 1914 (A. P. Dodd).

Habitat: Tweed Heads (Tweed River), New South Wales.

Type: No. *Hy 2538*, Queensland Museum, Brisbane, the specimen on a slide.

Dedicated to John Obadiah Westwood.

4. CLOSTEROCERUS ROSTANDI new species.

Female:—Length, 1.20 mm.

Bright metallic green, the abdomen except at base above, legs and the antennæ dark blue, the tarsi white. Parapsidal furrows curving off before reaching pronotum, the thorax densely scaly. Postmarginal vein as long as the stigmal. Characterized by the fore wing which is without stripes, only with a distinct black substigmal spot which, however, nearly reaches caudal margin opposite but fades rapidly from the middle of the wing, the latter broad. Mandibles bidentate. Funicle joints subequal, subquadrate, larger than the club joints taken separately. Terminal spur of club distinct. Hind wings with about 11 lines of discal cilia where widest.

From one female caught May 30, 1914, in forest (A. P. Dodd).

Habitat: Maclean (Clarence River), New South Wales.

Type: No. *Hy 2539*, Queensland Museum, Brisbane, the specimen on a slide with slide type of *Parahorismenus spissipunctatus* Girault.

Dedicated to Edmond Rostand.

5. CLOSTEROCERUS CURTISI new species.

Female:—Length, 1.25 mm. A most beautiful species.

Agrees with the description of *westwoodi* but the propodeum is also blue. Wings like those of *westwoodi* but the second band is distinctly caret-shaped, the apex of the caret jointed distinctly along center of blade to the middle of the apical or third cross-stripe, forming more or less distinctly the letter K. Also the first caret-shaped band is exactly similar to that of

westwoodi but it also is distinctly joined to the middle stripe by a short oblique band from its apex to the middle of the dorsal arm of that stripe. Hind tibial spurs single in both species.

What appeared to be the male was similar.

From one female caught on forest uplands, May 3, 1914 (A. P. Dodd).

Habitat: Tweed Heads (Tweed River), New South Wales.

Type: No. *Hy 2540,* Queensland Museum, Brisbane, the specimen on a slide with type *westwoodi.*

Respectfully dedicated to George William Curtis.

OMPHALOMORPHOIDES new genus of A. P. Dodd.

Like *Omphalomorphella* but the postmarginal vein not developed.

1. OMPHALOMORPHOIDES VIOLESCENS new species of A. P. Dodd. Genotype.

Female:—Length, 3.75 mm..

Brilliant metallic purple, the coxæ concolorous, rest of legs intense lemon yellow; antennæ black.

Antennæ 11-jointed, two ring, four funicle, three club joints; pedicel long, fully twice as long as greatest width, ring-joints large (forming a transition between ring and funicle joints), funicle and club joints transverse, the flagellum clavate. Mandibles bidentate. Scutum large, the scutellum also large, both densely reticulately scaly and with a few scattered punctures. Scutellum simple. Propodeum short, without carinæ, finely scaly. Abdomen sessile, short and broad, second segment slightly the longest. Wings long, hyaline.

Described from two females in the collections of the Macleay Museum and labelled "Sydney, N.S.W."

Habitat: Sydney, New South Wales.

Type: No. Hymenoptera 10D, Macleay Museum, Sydney University, two females on a tag; head and hind legs on a slide.

One hind tibial spur, deep complete parapsidal furrows, submarginal vein broken, marginal shorter than submarginal, stigmal very long, nearly as long as the marginal, postmarginal not developed; discal ciliation normal.

GENUS ZAOMMOMYIELLA Girault.

In this genus, the cheeks are very short yet distinct, the eye not quite extending to the mandibles.

1. ZAOMMOMYIELLA OCULATA (Girault).

One female was captured in jungle at Babinda, Q., February 11, 1914 (A. P. Dodd). The terminal spine of club is as long as joint 3. The abdomen has three dusky cross-stripes distad of the broad blue basal band. The oral area is yellow. Funicle 1 longest of the flagellum, subequal to pedicel.

2. ZAOMMOMYIELLA ABNORMIS Girault.

The vertex and sides of thorax are reddish brown. Type re-examined.

3. ZAOMMOMYIELLA TINTINNABULUM new species.

Female:—Length, 1.80 mm.

Similar to *oculata* Girault but on dorsal abdomen there is one broader metallic blue and three narrower dusky stripes distad of the broad basal stripe (only three narrow dusky stripes in *oculata*); the first or metallic of these stripes is deeply excised at meson from cephalic

edge (nearly divided) and is close to the basal stripe. Also, the scape is broader, the pedicel subelongate, somewhat longer than funicle 2. Otherwise identical. Types compared.

From one female caught in jungle, June 25, 1914.

Habitat: Gordouvale, Queensland.

Type: No. *Hy 2541*, Queensland Museum, Brisbane, the specimen on a tag with type of *persimilis*; head on a slide with types of *persimilis* and *sol.*

4. ZAOMMOMYIELLA PERSIMILIS new species.

Female:—Length, 1.80 mm.

Very similar to *oculata* but stouter, the axillæ are metallic blue, there are four dusky stripes on abdomen distad of the broad basal stripe, the scutellum is more distinctly punctate rather than scaly and its sculpture is denser; the first tooth of mandibles is distinctly larger than the inner two, which are paired and equal (in *oculata* the first two teeth are subequal, the third a little stouter, none paired) and the pedicel is subelongate, somewhat longer than funicle 2, which is next longest of the flagellum. The scape is yellow in both species. Club 1 longest of the three. Compared with type of *oculata.*

From one female caught in jungle, May 2, 1914 (A. P. Dodd).

Habitat: Tweed Heads (Tweed River), New South Wales.

Type: No. *Hy 2542*, Queensland Museum, Brisbane, the specimen on a tag; head on a slide.

5. ZAOMMOMYIELLA SOL new species.

Female:—Length, 1.30 mm.

Wholly grass green, the abdomen coppery except across base, the face rosaceous brassy. Legs white except the dark metallic coxæ and the black dorsal edges of all femora. Antennæ as in *persimilis.* Fore wing with a distinct fuscous cross-stripe from the small stigmal vein and distal fourth of the long marginal, the stripe rather broad, slightly curved and at cephalic half accented so as to form a square area more distinct than the caudal part, which is rather faint. Oral area orange yellow. Mandibles as in *persimilis.* Parapsidal furrows complete, rather broad, shallow, narrowing cephalad. Thorax coarsely densely punctate, the punctures flattened out on the scutellum. Propodeum glabrous, nonearinate. Segment 2 of abdomen glabrous, 3 mostly so, the rest scaly. Differs from *abnormis* in being wholly metallic (except the oral area narrowly), the femora black above, in having a distinctly shorter abdomen, smaller infuscated area on the fore wing, and this area forming a more or less distinct stripe and the punctures of the scutellum flattened or very shallow. The propodeum has several sunken cavities laterad and on each side of meson (but broadly separated) a narrow rather obscure carina from caudad, abbreviated cephalad.

Described from one female taken by sweeping jungle, May 2, 1914 (A. P. Dodd).

Habitat: Tweed Heads (Tweed River), New South Wales.

Type: No. *Hy 2543*, Queensland Museum, Brisbane, the specimen on a tag; head on a slide with type head of *Zaommomyiella persimilis.*

PARZAOMMOMYIA new genus.

Female:—Like *Zaommomyiella* Girault but the antennæ bear three ring-joints and the scutum and scutellum with a complete median sulcus. The abdomen is subelongate, slender, distinctly longer than the rest of the body. Marginal vein very long, over twice the length of the submarginal, the postmarginal nearly thrice the length of the rather short stigmal. Occiput very concave, the face subconvex. Axillæ only advanced a very little, the parapsidal furrows complete. Mandibles tridentate, the third tooth truncate. Cheeks very short but distinct. Pronotum not visible from above.

1. PARZAOMMOMYIA TENUICORPUS new species. Genotype.

Female:—Length, 2.65 mm.

Bronzy green, the abdomen dark coppery, blue at base, the fore wings slightly uniformly infuscated throughout, the legs white, the cephalic coxæ dark metallic, the knees and tarsi yellowish brown, also most of femora. Scape yellowish brown except at tip dorsad, the distal two club joints silvery white, rest of antenna black. Funicle 1 a little longer than 2, two and a half times longer than wide, over twice the length of the pedicel; joints 1 and 2 of club and funicle 2 subequal, club 3 much shorter, subequal to the pedicel, with a short terminal spine. Club rapidly narrowing distad. Thorax conspicuously scaly reticulate, the lines not raised. Propodeum short at meson, with median and lateral carinæ, the spiracle small, round, the lateral carina with foveæ along its mesal side.

From one female caught in jungle, June 25, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2544*, Queensland Museum, the specimen on a tag, the head on a slide with type *Entedonomphale margiscutum* Girault.

ENTEDONOMPHALE new genus.

Female:—Form small, slender. Characterised by the antennæ which are 6-jointed with one very short ring-joint, the club solid. Postmarginal vein absent or nearly, the stigmal normal. Propodeum noncarinate. Parapsidal furrows complete, the thorax otherwise simple. Club armed at apex with three or four rather stout spines from the edges. Antennæ inserted somewhat below the middle of the face. Fore wings naked.

1. ENTEDONOMPHALE MARGISCUTUM new species. Genotype.

Female:—Length, 0.63 mm.

Dark metallic green and finely scaly, the lateral margins of scutum orange yellow; scape, all tibiæ and tarsi and the cephalic femur, white; knees white. Antennæ black. Scape narrowing distinctly distad, the pedicel larger than either funicle joint of which 2 is globular, 1 slightly longer than wide. Club stout, oval, as long as the funicle. Mandibles absent. Fore wings with a substigmal spot (on the stigmal vein and not large) and with a large dusky cloud from apex of stigmal vein across to caudal margin and extending suffusedly proximad and distad. Marginal vein long, somewhat longer than the submarginal. Marginal cilia of fore wing short, the discal cilia absent. A yellow spot on vertex against the eye margin.

From one female caught by sweeping mangrove and other bushes on the bank of Tweed River, May 14, 1914 (A. P. Dodd).

Habitat: Chindera, New South Wales.

Type: No. *Hy 2545*, Queensland Museum, Brisbane, the specimen on a slide.

On page 177, *antea*, line 6, *caudad* should read *cephalad*; for line 31, the words *eyes normal* should be substituted. On page 178, line 5, *tridentate* should read *bidentate*.

SUBFAMILY TETRASTICHINÆ.

TRIBE TETRASTICHINI.

It is quite likely that some of the genera described by me are merely old genera correctly described, since I find that *Melittobia* has three ring-joints and thus formerly has always been incorrectly diagnosed. In some species of those genera bearing a median groove on the scutum, this groove may be partially obliterated, but seems to be always distinctly indicated. A study of variation in the group is badly needed. The ring-joints cannot always be seen by using the present simple methods and to make their detection easier and quicker some method analogous to staining should be devised. The group is a difficult one and presents a curious case of parallel evolution.

GENUS TETRASTICHUS Haliday.

Several of the species have been removed to *Neomphaloidella* and *Epitetrastichus* which see.

1. TETRASTICHUS QUEENSLANDENSIS Girault.

There is no lateral carina on propodeum, the latter short at meson. A row of punctures along lateral margin of scutum. Type re-examined.

2. TETRASTICHUS ACUTIVENTRIS (Girault).

Asyntomosphyrum acutiventris in *antea.*

Very similar to *poincarei* but the abdomen distinctly less stylate, the valves of the ovipositor extruded for a third of the length of that region. Also, the funicle joints are all globular and subequal, slightly longer than wide, subequal to the pedicel. Club with a short terminal spine, the third joint not distinctly separated. Antennæ pallid. Mandibles tridentate. A female at Gordonvale. Types re-examined.

3. TETRASTICHUS SAINTPIERREI Girault.

"One female, forest, Magnetic Island (Townsville), Queensland, January 27, 1913 (A.A.G.). The specimen agreed with the description of the species but funicle 1 was not longer than 2. Compared with type (except antenna of latter). Propodeum extremely short at meson. In this second female the antennæ are yellow-brown, the funicle joints subequal, each about a half longer than wide, the club almost as long as the two preceding joints united." (A. P. Dodd).

4. TETRASTICHUS UNICOLOR new species of Girault and A. P. Dodd.

Female:—Length, 1.65 mm.

Bright metallic green; tibiæ and tarsi pale straw yellow; femora suffused with metallic; antennæ black, the scape brown. Wings hyaline. Abdomen conic-ovate, a little longer than the head and thorax united. Funicle joints about subequal, each no longer than the pedicel and not twice as long as wide. Propodeum short; spiracle small, circular; lateral carinæ absent; median carina broad, flat and short.

Described from one female caught by sweeping in forest, June 25, 1912 (A. A. Girault).

Habitat: North Queensland (Gordonvale, near Cairns).

Type: No. *Hy 2546,* Queensland Museum, Brisbane, the above specimen on a tag, an antenna on a slide.

5. TETRASTICHUS LONGIPENNIS new species of A. P. Dodd.

Female:—Length, 1.15 mm.

Yellow-brown, the sides of thorax, parapsidal furrows and postscutellum a little darker, the scutellum dark brown; legs and antennal scape lemon yellow; pedicel and ring-joints brown, rest of antennæ black; abdomen with five obscure dusky cross-stripes. Median groove of scutum complete and distinct. Scutellum rather short. Propodeum with a median carina. Abdomen pointed conic ovate. Wings long and broad, hyaline. Pedicel elongate, as long as third funicle joint; funicle joints very long, 1 distinctly the longest; club not much shorter than the funicle, the club joints of equal length; ring-joints not small.

From one female caught by sweeping jungle (800 feet), September 13, 1913 (A. P. Dodd).

Habitat: Kuranda, Queensland.

Type: No. *Hy 2547,* Queensland Museum, Brisbane, the specimen on a tag; head on a slide.

6. TETRASTICHUS BICOLOR new species.

For description see *antea*, p. 201. Described from one female from jungle, May 8, 1913 (A. P. Dodd). The type is on a tag, the head on a slide. The scape yellow, also postscutellum. No lateral carina on propodeum. Stigmal vein short. Mandibles tridentate, the third tooth obliquely truncate. Terminal joint of club with a small terminal nipple. Type re-examined.

7. TETRASTICHUS NELSONENSIS Girault.

Antea, p. 200, line 1 under this name *fasciatus* should read *novifasciatus*.

8. TETRASTICHUS SEYMOURENSIS new species.

Female:—Length, 1.62 mm. Robust; of the form of *Tetrastichodes multifasciatus* Girault.

Orange yellow, the scutellum and margins of scutum lemon yellow; upper occiput centrally, face of pronotum, propodeum, a dot at cephalic apex of parapsides and of axillæ and four broad stripes across the abdomen, black. First three stripes of abdomen thick (appearing composite) each with latero-caudal foot-like projections at margin, the first stripe with a very narrow stripe joined to it for most all of its cephalic margin but free near the lateral margins; stripe 4 small, straight along distal margin, its proximal margin convex. A minute transverse dot just before tip, tip of abdomen and tip of ovipositor valves black. Wings stained a little with yellowish. Funicle joints thick, 1 and 2 subequal, each about a fourth longer than wide, 3 distinctly shorter, a little longer than wide, subequal to the pedicel. Propodeum very short. Club ending in a small nipple.

From one female captured in forest, February 17, 1913.

Habitat: Seymour (Ingham), Queensland.

Type: No. *Hy 2548*, Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

9. TETRASTICHUS BOSWELLI new species.

Female:—Length, 0.80 mm., excluding ovipositor which is exserted for nearly two thirds the length of the abdomen. Slender.

Agrees with the description of *saintpierrei* but the abdomen, though acutely pointed, is not slenderly conical, not distinctly longer than the thorax and the ovipositor is distinctly extruded. Also the green of the body is darker and more coppery; the ovipositor is only a little extruded in *saintpierrei*. The propodeum is very short at the meson in both species, widening laterad; in *saintpierrei* there is no lateral carina but a fovea in its stead (this may be due to shrivelling). In *boswelli* there appear to be no carinæ on the short propodeum. Funicle joints 2 and 3 subequal, slightly longer than wide, 1 slightly longer than either. Club with a distinct terminal spine. Pedicel subequal to funicle 1. Antennæ pallid dusky. Mandibles with the two outer teeth acute, the inner blunt, distinctly wider than the others.

From one female caught by sweeping forest, January 8, 1913.

Habitat: Capeville (Pentland), Queensland.

Type: No. *Hy 2549*, Queensland Museum, Brisbane, the female on a tag.

In the table of species, *antea*, p. 205, line 6, *face* should read *occiput*. In the original description of *flavios*, the name was misspelt *flavio*. For other former species, see *Neomphaloidella* and *Epitetrastichus*.

GENUS SYNTOMOSPHYRUM Foerster.

1. SYNTOMOSPHYRUM FLAVISCUTELLUM Girault.

This species is a *Selitrichodes* which see.

GENUS MELITTOBIA Westwood.

1. MELITTOBIA AUSTRALICA Girault.

A widely distributed species in Eastern Australia. The male antennæ bear four funicle joints, the fourth joint a little smaller than the first; the eyes are absent. The antennæ of the female bear *three* short ring-joints. The abdomen is subpetiolate, the petiole distinct in the male yet short. Types re-examined. *Antea*, p. 205, under this heading, line 5, *stained* should read *starred*.

The following additional specimens have been seen: Many specimens reared from the larvæ of *Sceliphron lætum* at Gordonvale (Cairns), Queensland, January 20, 1914 and again in mid-February. Many females from the collections of the Queensland Museum at Brisbane, labelled "Reared from wasp's nest, Brisbane, November 17, 1913. H. Hacker. No. 22." The femora were darker in these specimens. One male, four females from the collections of the National Museum, Melbourne, labelled "Bred out of old pupa case of muddauber wasp. 20.12.07. Bred from pupa of ? *Pscudagena*. ♀ scarce, 200-1. F. P. Spry." The locality was near Melbourne, Victoria. Also a female captured by sweeping in forest, Gordonvale, April, 1914.

GENUS TETRASTICHODES Ashmead.

1. TETRASTICHODES MORUM Girault.

Antea, p. 207, line 8 is meaningless. The species was captured in forest, early January, 1913. The species belongs to *Sclitrichodes* which see.

2. TETRASTICHODES AUSTRALICUS Girault.

A female at Gordonvale, Queensland, forest, April 16, 1913. *Antea*, p. 208, line 3, omit the word *round*.

3. TETRASTICHODES (ZAGRAMMOSOMOIDES) MULTIFASCIATUS new name.

Tetrastichodes fasciatus (Girault).

This species was once referred to *Tetrastichus* by mistake and has thus become confused with the species *fasciatus* Ashmead of that genus. *Tetrastichella fasciatella* Girault was described as *Tetrastichus fasciatus*. Accordingly, I propose the above name for this species.

4. TETRASTICHODES MARGISCUTELLUM new species.

Female:—Length, 1.35 mm.

Like *margiscutum* but only the inner grooves of scutellum are margined with pale yellowish, the head and femora black but the face about the mouth is yellow. Tegulæ dark; scutum not margined. Axillæ very narrowly so with yellowish (mesad and cephalad). Funicle 3 is only slightly shorter than the other two while all are much wider than long. Caudal margin of scutellum laterad of first groove narrowly yellow.

Male:—Not known.

Described from one female captured by sweeping in forest, November 7, 1912.

Habitat: Ayr, Queensland.

Type: No. *Hy 2550*, Queensland Museum, Brisbane, the above specimen on a tag, the head on a slide.

5. TETRASTICHODES SECUS new species.

Female:—Length, 1.20 mm.

Nearly exactly like *Syntomosphyrella acomata* Girault and Dodd but differing in coloration as follows: The whole of the propodeum is black and a little distad of middle of abdomen there are two cross-stripes of black. The axillæ are black for somewhat over cephalic half. Funicle, pedicel and mandibles as in the species named. Tegula and vicinity black. There may be a minute black dot on the shoulder and the scutum centrally may be more or less dusky. There may be a third and fourth stripe on the abdomen, one proximad, the other distad of the two lines and both interrupted at meson and a spot at base of scutellum.

Male:—Not known.

Described from four females reared from miscellaneous galls on Eucalyptus, October 9, 1913 (E. J. Girault).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 3462*, Queensland Museum, Brisbane, one female on a tag, the head on a slide.

6. TETRASTICHODES INTENTATUS new species of Girault and A. P. Dodd.

Female:—Leugth, 1 mm. Short and robust, the abdomen stout.

Brown ; the wings hyaline ; the abdomen with three broad black stripes across it, equidistant from each end, each stripe distinctly interrupted at the meson; legs and antennæ yellowish. Funicle joints subequal, each a little longer than wide. Mandibles tridentate. Head pale yellowish brown. Propodeum very short.

Described from one female caught by sweeping in forest, mainland, opposite Double Island, December 24, 1911 (A. A. Girault).

Habitat: Northern Queensland (near Cairns).

Type: No. *Hy 2551*, Queensland Museum, Brisbane, the above specimen on a tag.

7. TETRASTICHODES AURIFLAVUS new species.

Female:—Length, 1.80 mm. Form short and robust, the abdomen rounded.

Bright greenish or golden yellow, immaculate, but sometimes a subfuscous spot is present on pronotum, just cephalad of each parapsidal furrow and the abdomen has very faint indications of deeper yellow cross-stripes. Mandibles tridentate. Pedicel not elongate, but distinctly longer than first funicle joint which is somewhat longer than wide, distinctly longer than joints 2 and 3 which are subequal and somewhat wider than long. Club without a distinct terminal seta. Caudal margin of propodeum narrowly black. Scape somewhat compressed. First tarsal joint of hind legs shortest. Ocelli in a very flat triangle. Propodeum very short.

Male:—The same but the abdomen depressed.

Described from many specimens of each sex reared from miscellaneous galls on Eucalyptus, forest, October, 1913.

Habitat: Northern Queensland (Gordonvale, near Cairns).

Types: No. *Hy 2552*, Queensland Museum, Brisbane, one male, two females on a tag.

Ten females taken at random were examined for presence of the median sulcus on the scutum and in most cases it was found present, though absent in five females examined immediately after being taken from alcohol. However, in the ten dry females, the groove was never complete, was often oblique, often accompanied by lateral and unsymmetrical cracks and thus was most probably due to shrivelling. An examination for variation in the absence of this groove will have to be made from specimens as they are taken from alcohol. In one of these females, a dusky spot was present centrally at base of scutellum. There was no variation in the antennæ.

8. TETRASTICHODES QUINQNIGRIMACULÆ new species.

Female:—Length, 1.35 mm.

Honey yellow, the wings hyaline, the legs and antennæ concolorous. Face of pronotum, two round spots in centre of scutum, one at base of scutellum centrally, an elliptical oval spot filling the cephalic portion of each axilla and three narrow cross-stripes indicated from each side along proximal half of abdomen, black. Meson of abdomen sordid just beyond proximal half. Propodeum with a very short complete median carina. Postmarginal vein half the length of the stigmal. Mandibles tridentate. Distal club joint short, with a small terminal spur; scape compressed; pedicel rather long, distinctly longer than the second funicle joint which is somewhat longer than wide; funicle joints 1 and 3 subquadrate or 3 sometimes wider than long, none very unequal. Hind tibial spurs single.

Male:—Not known.

Described from one female reared from fleshy galls on gum, March 20, 1911 (F. P. Spry).

Habitat: Melbourne, Victoria.

Type: No. *Hy 2553*, Queensland Museum, Brisbane, the above specimen on a tag, the antenna and mandibles on a slide.

9. TETRASTICHODES SUSURRUS new species.

Female:—Length, 1.10 mm. Short, robust, the abdomen globular, the propodeum short.

Pale golden yellow, the wings hyaline, marked with dusky black as follows:—Two pairs of transverse marginal dots on abdomen out from base, followed by two complete cross-stripes (these thinning at meson), then a third thinner cross-stripe interrupted at the meson (at distal three fourths); propodeum; median line of scutellum not very broadly but uniformly; two subcontiguous wedgeshaped spots on cephalic half of scutum (reaching from cephalic margin to about middle, narrowly separated along meson), from these meson of scutum rather broadly (broader than meson of scutellum) to apex; apex (caudad) of each parapside; tegulæ and the axillæ except caudo-mesal end. Propodeum yellow at the spiracle and laterad of it, apparently noncarinate but with a carina laterad of spiracle. Antennæ dusky; scape short, compressed; pedicel much longer than any funicle joint; funicle joints subequal, somewhat wider than long; club wider than the funicle, without a distinct terminal spine. Mandibles tridentate. Fore wings broad.

From one female captured by sweeping forest, April 12, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2554*, Queensland Museum, Brisbane, the specimen on a tag; head on a slide.

GENUS APROSTOCETUS Girault.

1. APROSTOCETUS KURANDENSIS (Girault).

This is a species of *Neomphaloidella.*

2. APROSTOCETUS IMPERIALIS Girault.

The type is a female on a tag together with a slide. A female, Gordonvale, Queensland, forest, December 9, 1913. The club bears a distinct terminal spine. Mandibles bidentate, the second tooth truncate.

"One female, type locality, forest, December 4, 1913 (A.A.G.). The median groove of scutum was almost obliterated, visible at distal third only." (A. P. Dodd.)

3. APROSTOCETUS SEXGUTTATUS Girault.

Antea, p. 213, line 11, *Epentastichus flavella* Girault is the species intended; line 8, *1913* should read *1912*. This species belongs to *Epentastichus* which see.

4. APROSTOCETUS OBSCURUS Girault.

A female, jungle, Babinda, Queensland, February 13, 1914 (A. P. Dodd). Funicle 1 is only about one and a half times longer than wide. The pronotum is metallic bluish, perhaps.

5. APROSTOCETUS IMAGO new species.

Female:—Length, 1.25 mm. Short, stout, the propodeum very short, the abdomen stout.

Almost exactly the image of *Tetrastichodes secus* Girault but stouter, greenish yellow, the pronotum broadly along meson is black; also the long scutum bears a distinct sulcus and is of the usual sculpture of the tribe (in *secus*, the scutum is very minutely, densely reticulately scaly). There is no minute dot just mesad of tegula. Pedicel black above at base, subequal to funicle 2 which is longest, somewhat longer than wide; funicles 1 and 3 subequal, quadrate. Club with a distinct terminal spine. Outer tooth of mandible distinct, acute, the inner two shorter, acute. Compared with type of *secus*. Abdomen with two distinct stripes at middle.

From one female caught by miscellaneous sweeping, May 11, 1914 (A. P. Dodd).

Habitat: Murwillumbah, New South Wales.

Type: No. *Hy 2555*, Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

This species is remarkably like the *Tetrastichodes*. The third club joint is obliquely divided from the others.

6. APROSTOCETUS PLATONI new species.

Female:—Length, 1.20 mm.

Greenish yellow, the wings hyaline, the propodeum except caudad on each side of meson, ocellar area, most of axillæ, four to five spots on each side of abdomen, the space between the third and fourth occupied by a broad smoky cross-stripe (at middle of abdomen or nearly) and tegulæ, dusky black. Propodeum with a short median carina and several irregular carinæ near the spiracle. Scutellum laterad of second groove, blackish. Funicle joints 2 and 3 subequal, a little longer than 1 which is not much longer than wide; pedicel as long as funicle 2. Mandibles tridentate, the two outer teeth acute and longer. Distal club joint with its separating suture oblique, its terminal spine small but distinct.

Male:—Not known.

Described from two females reared from a miscellaneous collection of galls from forest trees, November 8, 1913.

Habitat: Gordonvale (Cairns), Queenslaud.

Types: No. *Hy 3457*, Queensland Museum, Brisbane, the above specimens on a slide.

The species is dedicated to the philosopher Plato.

7. APROSTOCETUS TARSALIS new species.

Female:—Length, 1.22 mm.

Dark metallic purple, the abdomen honey yellow margined rather narrowly with purple from base nearly to apex, dorsad with a mesal purple transverse spot tending to be a cross-stripe (faintly so from each side of the meson) at middle followed by a round spot on the next segment at meson. Coxæ and proximal third of femora concolorous; rest of legs and scape colored like the abdomen; pedicel and ring-joint suffused with yellowish. Funicle joints elongate, each distinctly much longer than the pedicel, 1 a little the longest, over twice longer than wide, not quite as long as the club, the latter with a distinct terminal spine. Pedicel only a third longer than wide at apex. Mandibles edentate, obtusely pointed; oral area orange yellow. Abdomen at base but very narrowly purple if at all. Propodeum distinctly

unicarinate (median), the caudal margin strongly carinate and a neck indicated, from each lateral end of which is a short piece of a lateral carina, thus this carina indicated from apex (caudad). Stigmal vein long. Allied with *tenuis*. Scape slender.

"First three tarsal joints very short, the fourth much enlarged, as long as the others, with a large swollen empodium, the claws large." (A. P. Dodd.)

From one female captured by sweeping in jungle, May 5, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2556*, Queensland Museum, Brisbane, the specimen on a tag; head and legs on a slide.

Another female was taken, January 29, 1911 in same place (A. P. Dodd).

8. APROSTOCETUS PURPUREIVARIUS new species.

Female:—Length, 1 mm.

Similar to *viridiflavus* Girault but not only the pedicel at base and the distal club joint is purple black but the entire club is so and each funicle joint is distinctly blotched with purple at proximal half. Moreover, the terminal spine of club is longer and funicle 2 is distinctly the longest; funicle 1 subequal to the pedicel and somewhat shorter than 3. Propodeum with a weak median carina and no others.

One female captured by sweeping in jungle, March 6, 1914 (A. P. Dodd).

Habitat: Cooktown, Queensland.

Type: No. *Hy 2557*, Queensland Museum, Brisbane, the female on a tag, head on a slide.

9. APROSTOCETUS TENUIS new species.

Female:—Length, 0.90 mm.

Colored somewhat like *margiventris* Girault but the legs and antennæ wholly pale lemon yellow, the coxæ blackish at base, the body is shining black, the distal sixth (tip) of abdomen and margins all around narrowly, black, the cross-stripes of black commencing just within the proximal half and three in number, not especially thin. The funicle is the same but either of the distal two joints is longer than the pedicel. Mandibles tridentate. Distal club joint dusky. Propodeum tricarinate, the median short but complete.

Described from female captured by sweeping in a jungle pocket, June 3, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2558*, Queensland Museum, Brisbane, the above specimen on a tag, the head on a slide.

10. APROSTOCETUS FLAVOBASALIS new species.

Female:—Length, 1.10 mm.

Coloured much like *imperialis* but dark æneous green, the venter of abdomen yellow only proximad and the yellow spot above near (not just at) base is of moderate size only; also the mandibles are quite different, bearing 3 distinct, acute teeth (in *imperialis*, only 2 teeth, the first short, obtusely pointed, the second broadly truncate); the distal funicle joint is longer, the pedicel somewhat shorter; funicle and club darker, blackish, the distal club joint whitish. Propodeum with a long, distinct median carina. Scape, pedicel and ring-joint lemon yellow like the legs. Sculpture of propodeum rougher than rest of thorax, the lateral carinæ not very distinct.

From one female caught by sweeping in jungle, May 20, 1913 (A. P. Dodd).

Habitat: Kuranda, Queensland.

Type: No. *Hy 2559*, Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

11. APROSTOCETUS NECOPINATUS new species.

Female:—Length, 1.10 mm.

Dark metallic purple, the wings hyaline, the antennæ, legs and abdomen, lemon yellow, the abdomen margined rather broadly along proximal two thirds with metallic purple, purple at tip (not broadly) and midway between end of marginal stripes and tip, with a distinct but narrow metallic purple cross-stripe. First coxæ concolorous. Pedicel and funicles 2 and 3 subequal, funicle 1 a little longer than either, one and a half times longer than wide. Mandibles somewhat as in *bilongifasciatus*, with 2 large, acute outer teeth and a minute acute inner one. An obscure stripe indicated between the end of the marginal stripes on abdomen. Compared with types of *bilongifasciatus* and *tenuis* and with those of *Selitrichodella metcora* and *S. purpureithorax* Girault.

From one female caught in jungle, January 17, 1914 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2560*, Queensland Museum, Brisbane, the female on a slide.

12. APROSTOCETUS SALTENSIS new species.

Female:—Length, 1.10 mm.

Dark metallic blue, the wings hyaline, the following parts golden yellow: Head, abdomen, antennæ, a little over distal fourth of scutum and lateral margins of same. Legs lemon yellow except the concolorous hind coxa. Abdomen from base with three pairs of small blue marginal spots (proximal half or somewhat less) followed by several transverse stripes on the distal half. Fore wing rather narrow (about 16 lines of cilia where widest), the stigmal vein short. Tip of abdomen colored. Funicle joints 2 and 3 subequal, barely shorter than 1 which is slightly longer than wide and subequal to the pedicel; club with only a slight terminal spine.

This species resembles somewhat *Ootetrastichus subfasciativentris* for which I mistook it but besides the obvious generic differences, there is more blue on the scutum, the valves of the ovipositor are not plainly extruded, the first funicle joint is short, there are only two complete abdominal stripes (as far as I could make out), the wings are shorter and so on.

From one female caught by sweeping in forest, December 24, 1912.

Habitat: Capeville (Pentland), Queensland.

Type: No. *Hy 2561*, Queensland Museum, Brisbane, the female on a slide.

13. APROSTOCETUS BILONGIFASCIATUS new species.

Female:—Length, 0.95 mm.

Like *tenuis* but metallic purplish black, the abdomen honey yellow margined down each side from base for about two thirds the way to tip, otherwise without markings, the valves distinctly extruded, purplish along their distal halves, the propodeum and postscutellum with a yellowish tinge; head yellowish brown. Propodeum with a distinct median carina, the lateral carinæ apparently absent. Mandibles tridentate, the two outer teeth well developed, acute. Funicle joints subequal, about two and a fifth times longer than wide, slightly shorter than the elongate pedicel. Antennæ filiform, the terminal nipple of club inconspicuous. Antennæ and legs pale yellow.

From one female captured by sweeping in forest, January 2, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2562*, Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

Genus OOTETRASTICHELLA Girault.

1. OOTETRASTICHELLA LONGIVENTRIS Girault.

A female, jungle, Halifax (Ingham), Queensland, April 6, 1914 (A. P. Dodd). The head and thorax are practically dark metallic green, also the abdomen above. The club joints are well separated. Type re-examined.

GENUS OOTETRASTICHUS Perkins.[6]

Head (cephalic aspect) longer than wide, the genal suture long, deep.

1. OOTETRASTICHUS BEATUS Perkins.

Unfortunately, the marginal spots on the abdomen of this species are not definitely described.[7] The following apparent new varieties. *Antea,* p. 217, line 3, *dots* should read *spots.*

A. OOTETRASTICHUS BEATUS ANCEPS new variety. Female.

Golden yellow; quite as described for the typical form. The five marginal spots on abdomen are round, rather large and extend from near base to distal two thirds. Markings only slightly metallic. Characterized apparently by the rather large marginal spots on abdomen. General color fades after death to pale yellow.

From one female captured by sweeping in a weedy Chinese garden, November 3, 1912.

Habitat: Proserpine, Queensland. No type.

B. OOTETRASTICHUS BEATUS AFFINIS new variety of A. P. Dodd and A. A. Girault.

Female:—Length, 1.60 mm. Pale lemon yellow and agreeing with Perkins's description of *beatus beatus* except that the spots on the lateral margins of abdomen are not *spots* but transverse *dashes* (except a *dot* at base; four *transverse dashes*).

Described from one female captured by sweeping jungle along a forest streamlet, January 3, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2563,* Queensland Museum, Brisbane, the female on a tag, the head on a slide.

2. OOTETRASTICHUS LUSTRIS Girault.

This is the genotype of *Proceratoneura* in the Ceratoneurini, described on a later page. *Antea,* p. 218, line 7 of the diagnosis *one* should read *are.*

3. OOTETRASTICHUS CONSIMILIS Girault.

A female, forest, type locality, April 9, 1914. The pronotum and propodeum have a purplish tinge. First three stripes of abdomen more distinct than the fourth, the third stripe a little distad of middle. The marginal black of abdomen is more or less broken. Propodeum scaly, with a median carina but no true lateral ones.

4. OOTETRASTICHUS SILVENSIS Girault.

This belongs to *Neotetrastichodes* which see.

5. OOTETRASTICHUS GUTTATUS Girault.

A female from forest, type locality, August 13 and December 14, 1913. The markings are dark metallic green. A dot on pronotum caudo-laterad. Propodeum on each side dusky. Fifth marginal spot on abdomen much smaller than the others. Mandibles tridentate. Valves of ovipositor shortly extruded. Funicles 2 and 3 subequal. Axillæ concolorous (soiled in the type). Stigmal vein long; wings slender. The large oval fuscous spot in center of abdomen at base absent (in the type due to débris). Allied with *fasciativentris.* Type re-examined.

[6] The species *fasciativentris* is common at Gordonvale, Queensland, from where it was described from specimens captured in December, 1912. The *type* is on a tag and slide.

[7] "Four or five pairs of marginal spots" which may mean four or five pairs (8-10) on each margin (16-20) or four or five on each side (8-10). I have taken it to mean four or five along each margin, since really paired marginal markings are rare (an example is *Grotiusiella multiguttata* described in part XIV). Also, the spots may be round, square, or and so forth.

6. OOTETRASTICHUS NYMPHA new species.

For diagnosis see *antea*, pp. 217-218. The species is here in the literature for the second time only. Immediate base of abdomen edged with metallic green. Flagellum dusky. Funicle 1 not as long as the club. One female, jungle, May 8, 1913 (A. P. Dodd). The type is on a slide.

7. OOTETRASTICHUS GLORIOSUS new species of Girault and A. P. Dodd.

Female:—Length, 2 mm.

Brilliant metallic purple; all legs intense lemon yellow; antennæ brownish yellow. Wings hyaline. Propodeum not very short, sculptured like the scutum and scutellum, with a median carina; spiracle small, circular, situated further caudad than is usual, with no carinæ or grooves about it. Abdomen pointed ovate, no longer than the head and thorax united. First funicle joint distinctly longer than the pedicel, two and a half times as long as wide; second distinctly shorter than first, no longer than pedicel; third a little shorter than pedicel; club not much longer than first funicle joint; second club joint slightly longer than first.

Described from one female caught by sweeping in forest, November 6, 1912 (A. A. Girault).

Habitat: Northern Queensland (Ayr, 50 miles south of Townsville).

Type: No. *Hy 2564*, Queensland Museum, Brisbane, the above specimen on a tag, the head on a slide.

"A female at Gordonvale, Q., forest, January 8, 1914. General color dark æneous; median carina of propodeum solid. Stigmal vein short, the marginal long. Club 1 distinct, shorter than 2. Antennæ darker than in the type specimen. Type compared." (A.A.G.)

8. OOTETRASTICHUS BRUNNEIVENTRIS new species of Girault and A. P. Dodd.

Female:—Length, 1.60 mm.

Dark brown; pronotum, scutum and scutellum dark metallic coppery green; legs, including coxæ, pale straw yellow; antennæ wholly brownish yellow. Wings hyaline. Propodeum not short, sculptured like rest of thorax, with a distinct median carina; lateral carinæ absent. Spiracle situated against cephalic margin of propodeum. Abdomen no longer than the head and thorax united. First funicle joint two thirds longer than pedicel, fully four times as long as wide; 2 a little shorter than 1; 3 a little shorter than 2, but one half longer than pedicel; club much longer than first funicle joint, first club joint shorter than third funicle joint; second club joint longer than first, terminating in a spur.

Described from one female caught by sweeping in jungle, December 31, 1911 (A. A. Girault).

Habitat: Northern Queensland (Yungaburra, 2,500 feet, near Cairns).

Type: No. *Hy 2565*, Queensland Museum, Brisbane, the above specimen on a tag, the head on a slide.

9. OOTETRASTICHUS SALTENSIS new species.

Female:—Length, 1.50 mm. Valves of ovipositor prominent distad but not exserted, the abdomen long.

Deep orange yellow and like *fasciativentris* Girault but the abdomen with three marginal spots the third pair connected transversely by a stripe across just distad of middle. First marginal spot well out from the base of abdomen. Cephalic half of each parapside metallic, the markings deep metallic purple. The marking on cephalic scutum is shorter and somewhat less cordate and it extends a short distance onto the pronotum. Propodeum wholly metallic, with a distinct median carina and no others. Tip of ovipositor

valves black. A long cuneate piece adjoining the axilla and distinctly caudad of it extending along each side of scutellum to the latter's middle is concolorous with the axilla. Funicle 3 longer than pedicel by a little.

From one female captured in forest, January 2, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2566*, Queensland Museum, Brisbane, the female on a tag.

10. OOTETRASTICHUS SUBFASCIATIVENTRIS new species.

Female:—Length, 1.17 mm.

Very similar to *fasciativentris* but the abdomen bears three cross-stripes (and an obscure fourth at apex) on somewhat over distal third, preceded by three marginal spots, the proximal pair at base; also the general coloration is golden yellow and the black valves of the ovipositor are distinctly extruded. Mandibles tridentate.

From one female captured in forest, January 14, 1912.

Habitat: Capeville (Pentland), Queensland.

Type: No. *Hy 2567*, Queensland Museum, Brisbane, the female on a slide.

11. OOTETRASTICHUS SEPTEMGUTTATUS new species.

Female:—Length, 1.20 mm.

Pale lemon yellow, the wings hyaline, the body marked with dark metallic green as follows: A subcordate marking on cephalic third of scutum, a diamond-shaped spot on lateral angle of pronotum, axillæ and a large area just latero-caudad of it, propodeum except along the meson, three wedgeshaped marginal spots on abdomen (increasing in size distad, the third at distal two thirds, their acute apices pointing mesad), a round spot at the meson at distal three fourths and opposite to this at the margin a very minute dot. Valves of ovipositor black. Funicle 1 distinctly much longer than 2 or 3 which are subequal and somewhat shorter than the pedicel. Mandibles tridentate. Stigmal vein long. Propodeum with a median carina and no others excepting a very narrow carina just laterad of the spiracle.

From one female captured by sweeping forest, March 28, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2568*, Queensland Museum, Brisbane, the specimen on a slide.

12. OOTETRASTICHUS PULCHRINOTATUS new species.

Female:—Length, 1.30 mm.

Bright golden yellow, the wings hyaline, the antennæ dusky black. Marked with dark metallic green as follows: A peltate area on face just ventrad of insertion of antennæ, ocellar area, pronotum, parapsides, axillæ, a subcordate area on cephalic scutum along about cephalic third and not reaching laterad to margins, scutellum between first grooves, distal two thirds of scutellum between first and second grooves, hind coxa and propodeum; abdomen with a spot at center of base, lateral margins from base a short distance, then five large marginal spots between end of lateral marginal green and apex, these spots in the shape of an elbow, parallel with and along the margin a short distance then proximad turned mesad a short distance, the mesal arm slight on first pair, increasing distad, long on fifth pair and approaching each other (as regards the fifth pair), forming an interrupted (at meson) cross-stripe. A narrow cross-stripe between fifth marginal spot and apex. Valves of ovipositor black at tip. Distal two funicle joints nearly equal, a little longer than the pedicel, 1 much longer, over twice longer than wide. Third tooth of mandible obliquely truncate. Propodeum with a median carina and, apparently, a lateral carina directly from spiracle. Distal half of mesopleurum metallic green.

From one female captured by sweeping forest, April, 20, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2569*, Queensland Museum, Brisbane, the female on a slide.

13. OOTETRASTICHUS VIRIDICYANEUS new species.

Female:—Length, 1.15 mm.

Metallic blue-green, the head sordid yellow, the basal third of abdomen suffused with whitish. Wings hyaline. Legs white except hind coxa and bases of others which are metallic. Antennæ whitish, suffused with dusky. Pedicel subelongate, dusky at base above, subequal to funicle 1 which is distinctly longer than 2; 3 slightly shorter than 2; funicle 1 shorter than the club, thrice its own width, not excessively long; funicle 2 somewhat less than twice longer than wide. Mandibles tridentate. Stigmal vein long. Upper occiput metallic.

From one female caught by sweeping miscellaneous vegetation, October 5, 1911.

Habitat: Roma, Queensland.

Type: No. *Hy 2570*, Queensland Museum, Brisbane, the specimen on a slide with type appendages of *Neomphaloidella semiflaviceps*.

14. OOTETRASTICHUS QUADRIGUTTATIVENTRIS new species.

Female:—Length, 1.30 mm.

Dark metallic blue-green, the wings hyaline; abdomen, head and legs golden yellow except hind coxa; abdomen marked with dark metallic green as follows: The whole ventral aspect, the whole dorsal aspect except proximal fourth and two rather large (wider than long) yellow spots longitudinally on each side of the meson in the distal half of proximal half; the yellow proximal fourth bears a narrow cross-stripe of greenish about distal three fourths and is margined with greenish to the cross-stripe but not broadly. Lateral aspect of abdomen golden yellow. A U-shaped green marking over the ocelli. Antennæ wholly dusky; funicle 1 a little shorter than the club, 3 a little shorter than the pedicel, somewhat longer than wide. A row of small punctures along caudal margin of pronotum. Mandibles tridentate. Propleurum just above coxa lemon yellow, also the tegulæ. The narrow caudal apex of each parapside lemon yellow. Propodeum with a median carina only, scaly. Type re-examined.

From one female captured by sweeping forest, April 3, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2571*, Queensland Museum, Brisbane, the female on a tag; head on a slide.

A second female was captured a few days later in about the same place.

15. OOTETRASTICHUS PURPUREICORPUS new species.

Female:—Length, 1.65 mm. Compared with type of *gloriosus*.

Wholly dark metallic purple, the legs (including coxæ) white, the scape dusky pallid; rest of antenna black and like those of *sublustris* but the funicle joints all longer, 1 being as long as the club. Propodeum with a distinct median carina and no others but the lateral and caudal margins are carinated (apparently the same in *sublustris*). Abdomen somewhat acuminate toward tip. Closely allied with *sublustris* from which it differs in general coloration, in having the hind coxæ colored like the legs and funicle 1 as long as the club. In both species, the funicle joints gradually decrease in length. Similar in every respect to *gloriosus* but purple and the flagellum is black (not merely dusky), funicle 3 plainly twice longer than wide, plainly longer than the pedicel.

From one female caught in jungle, March 1, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2572*, Queensland Museum, Brisbane, the specimen on a tag; head on a slide.

In the table of species, *antea*, p. 221, line 10 of the table, *funicle 3* should read *club 2*.

GENUS TRICHAPOROIDELLA Girault.

Synonym: *Aprostoceroloides* Girault.

1. TRICHAPOROIDELLA DECORA Girault.

This species belongs to *Neotrichaporoides* Girault which see.

2. TRICHAPOROIDELLA DUBIA Girault.

The type specimen was taken November 3, 1912.

3. TRICHAPOROIDELLA SPECIOSUS (Girault). Genotype of *Aprostoceroloides*.

The median groove of scutum is absent. Type re-examined.

4. TRICHAPOROIDELLA MARGIVENTRIS (Girault).

From *Aprostoceroloides*. Type re-examined. The marginal stripe of abdomen is dark metallic green. A second female taken in the type locality, November 7, 1913 bore two dots in a longitudinal line on meson of abdomen, distinctly distad of the apex of the marginal stripes. Median carina of propodeum long and thin.

5. TRICHAPOROIDELLA PARTICOLOR new species.

Female:—Length, 1.20 mm. Slender.

Dark metallic green, the wings hyaline, the legs white, the hind coxa washed with metallic above; ventral half of head, propleura, prepectus, tegula, cephalic margin of mesopleurum, an ovate spot filling center of abdomen at base, meson of abdominal venter and sides of abdomen at proximal third, honey yellow. Propodeum coarsely scaly, with a distinct median carina, the sculpture nearly punctate, rougher than the rest of the thorax; caudal and lateral margins carinated. Funicle joints each shortening; 1 elongate, nearly as long as the club (three fourths its length), much longer than the pedicel which is somewhat shorter than joint 3 which is much longer than wide.

From one female caught November 3, 1912 on banks of the river. Jungle.

Habitat: Proserpine, Queenslaud.

Type: No. *Hy 2573*, Queensland Museum, Brisbane, the specimen on a tag, the antenna on a slide.

6. TRICHAPOROIDELLA RADIUS new species.

Female:—The same as *eleganta* in stature and so forth but differing in the following particulars: The stripe down meson of pronotum is somewhat narrower, the scutum the same but the large green marking is obtusely conical there leaving distinctly more than the lateral margins yellow (the space between lateral margin of scutum and lateral margin of the green marking at cephalic margin is twice broader); the stripe down meson of scutellum is somewhat narrower, the spot on axillæ oval and thus smaller while the abdomen though similarly margined bears only three complete cross-stripes, one distad of ends of marginal stripes with a cephalic projection at meson (and slight ones at each margin), one joining the ends of the marginal stripes and one preceding this farther proximad; between this first stripe and base, two cross-stripes are slightly indicated by short projections mesad from each margin. Lateral margin of propodeum margined, the lateral carinæ absent, the median distinct.

In *eleganta*, the cephalic half (or nearly) of each parapside, except along lateral margin, is metallic green. In *radius*, the cephalic third of that sclerite is metallic green; the scape except at tip is yellowish; rest of antenna dusky black.

From one female captured by sweeping forest, March 30, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2574,* Queensland Museum, Brisbane, the specimen on a tag; head on a slide.

A female taken in forest, same locality, February 16, 1912 (A. M. Lea and A.A.G.) had no distinct stripes on abdomen but two stripes within the margined part were indicated from each side; the funicle and club were yellow not blackish. This new variety may take the name of *perfecta.* No type.

Both *eleganta* and *radius* bear a spot on latero-caudal angle of pronotum just cephalad of the green on the parapside. Types of both species compared.

7. TRICHAPOROIDELLA MAUPAUSSANTI new species.

Female:—Length, 1.40 mm.

Dark metallic green, the wings hyaline, the legs, ventral third of head, center of propleurum, tegulæ and abdomen except at distal third and lateral margins obscurely all round, dorsad, dull golden yellow; three dusky stripes on abdomen dorsad across the yellow proximal portion. Scape yellow except at tip above, the rest of antennæ fuscous. Pedicel a little shorter than funicle 3, funicle 1 shorter than the club, nearly thrice longer than wide, longest. Pedicel long. Postscutellum brownish. Propodeum with median carina and no others, scaly. Scutum naked. Color of abdomen darkens rapidly after drying. Surface of propodeum not as rough as in *subænea* whose scutum is also naked.

From one female caught in forest, January 23, 1913.

Habitat: Townsville, Queensland.

Type: No. *Hy 2575,* Queensland Museum, Brisbane, the specimen on a tag.

Dedicated to Guy de Maupaussant.

8. TRICHAPOROIDELLA PESSULUS new species.

Female:—Length, 1.83 mm.

Very similar to the preceding but all of head except vertex and the sides and venter of thorax are golden yellow, the body is stouter and the three cross-stripes on abdomen are interrupted at meson, the third longest (cephalo-caudad); the lateral margin of abdomen is more distinctly margined dorsad. Postscutellum concolorous.

From one female caught January 23, 1913 sweeping forest.

Habitat: Townsville, Queensland.

Type: No. *Hy 2576,* Queensland Museum, Brisbane, the specimen on a tag with type of preceding species.

Genus TETRASTICHOMORPHA Girault.

1. TETRASTICHOMORPHA FLAVA Girault.

This species differs in color from *Neotrichaporoides uniguttatus* as described. The fore wing is large, the marginal vein long, much longer than the submarginal, the stigmal short. A dot at extreme caudo-lateral angle of the pronotum (*flava* only). There is a median carina on the propodeum in both species and no other carinæ; both are large yet slender. Types re-examined.

The species *flava* measures 2.20 mm. Propodeal spiracle round. Funicle and club black; wings hyaline; tip of valves of ovipositor black; club terminating in a nipple. The type female was taken in forest, April 5, 1913.

2. TETRASTICHOMORPHA ÆNEICORPUS new species of Girault and A. P. Dodd.

Female:—Length, 1.65 mm.

Dark æneous green, the wings hyaline, the legs white except hind coxæ, the scape white except at tip; rest of antennæ black. A small triangle of lemon yellow just in front of cephalic ocellus. Propodeum with a distinct median carina and no others, the sculpture roughly polygonally scaly. Abdomen metallic blue. Median sulcus of scutum incomplete cephalad. Abdomen sculptured like the thorax, conic-ovate, a little longer than the rest of the body. Second ring-joint short, the pedicel long, a little shorter than the distal club joint which is about one and three fourths times longer than broad; first funicle joint subequal to the club, a fourth longer than the second, which is a little over twice longer than wide. Mandibles tridentate, but the third tooth emarginate and obliqne at apex. Marginal vein longer than the submarginal, long, the stigmal short, with a short neck.

Described from one female caught by sweeping in the bed of a forest streamlet, December 4, 1913 (A. A. Girault).

Habitat: Northern Queensland (Gordonvale, near Cairns).

Type: No. *Hy 3481,* a female on a tag, the head on a slide.

GENUS SELITRICHODELLA Girault.

1. SELITRICHODELLA MIRA Girault.

The species measures about 1.15 mm. and is associated with a gall on the midrib of leaves of cockatoo apple. Posterior wings acutely pointed. The type specimens were reared December 15, 1912 and are together on a slide.

A female at Cairns, Queensland, by sweeping in forest, October 25, 1911. The proximal funicle joint is somewhat shorter than each of the other two. The scape is distinctly compressed, more so than with *meteora,* described next. It is more robust than *meteora.*

2. SELITRICHODELLA METEORA new species.

Female:—Length, 0.63 mm.

Like *mira* but distad the abdomen bears one complete cross-stripe of purple between the ends of the cut-off marginal stripe, a spot of purple dorsad centrally at tip and the indications from each side of a second cross-stripe a little proximad of the first. Both mandibles bidentate, the inner tooth broadly truncate, the mandibles weak. The two distal funicle joints subequal, each a little longer than the first, a little shorter than the pedicel. Coxæ concolorous.

Described from a single female captured from a window, September, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2577,* Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

3. SELITRICHODELLA PURPUREITHORAX new species.

Female:—Length, 1.10 mm.

Like *meteora* Girault but the abdomen more slender, longer than the rest of the body, its tip distinctly rather broadly purple and the stripes on the abdomen are reversed and more pronounced—thus at the termination of the marginal stripe on each side not far from the purple of tip there is an indication from each side of a cross-stripe and a complete, distinct cross-stripe farther proximad (farther proximad than the indicated cross-stripe in *meteora* and farther from ends of the marginal stripes), at about somewhat more than distal

third. Also base of abdomen is not narrowly purple; marginal purple of abdomen tends to be broader distad, narrowing toward base. Otherwise the same as *meteora* as far as can be told.

The species *meteora* bears a complete median carina on propodeum which is very short at the meson but lateral carinæ appear to be absent. Also in this new species, the mandibles are tridentate. Propodeum not clearly seen, short at the meson.

From one female captured in jungle, December 27, 1913 (A. P. Dodd).

Habitat: Harvey's Creek (Cairns), Queensland.

Type: No. *Hy 2578*, Queensland Museum, Brisbane, the specimen on a slide.

4. SELITRICHODELLA COMETES new species.

Female:—Length, 1.05 mm.

Like *mira* but the center of scape above and funicle 1 are also purple; funicles 2 and 3 subequal, 2 longer. Mandibles bidentate, the second tooth emarginate at apex. Propodeum with a median carina and a lateral one on each side of the spiracle, close to the latter but not true lateral carinæ.

From one female caught on bushes, November 10, 1913 (G. F. Hill).

Habitat: Port Darwin, Northern Territory.

Type: No. *Hy 2579*, Queensland Museum, Brisbane, the female on a tag; head on a slide.

5. SELITRICHODELLA SULFUREIVENTRIS new species.

Female:—Length, 0.80 mm. Abdomen no longer than the thorax.

Brilliant dark metallic purple, the antennæ, legs, and abdomen immaculate, pale sulphur yellow, the wings hyaline. Cephalic coxæ mostly concolorous. Funicles 2 and 3 subequal, each a little longer than 1, each distinctly longer than wide, the pedicel somewhat shorter. Funicle 3 distinctly shorter than the club. Mandibles bidentate. Propodeum with several carinæ just laterad of the spiracle and one on each side of it.

From one female reared from cecidoymiid galls on *Careya australis*, December, 1912 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2580*, Queensland Museum, Brisbane, the specimen on a slide.

6. SELITRICHODELLA SPISSIGRADA new species.

Female:—Length, 1.20 mm.

Abdomen longer than rest of body, conic.

Black, the wings hyaline, the scape and legs pale, the hind coxa black; scutum long, lateral margins of parapsides with slight traces of yellow; antennæ dusky; the pedicel dusky above, otherwise subpallid, moderately long, shorter than funicle 1, subequal to funicle 2 which is longer than 3, the latter distinctly longer than wide; funicle 1 over twice longer than wide, distinctly shorter than the club which bears a short terminal spine. Mandibles tridentate, the teeth short and obtuse. Oral area yellowish. Fore wing with about 25 lines of rather fine discal cilia where widest, the stigmal vein long. Valves of ovipositor projecting a little. Mesopostscutellum orange yellow; propodeum very short at meson, without noticeable carinæ.

From one female from the Queensland Museum, through the kindness of Dr. Hamlyn-Harris, collected among undergrowth (mostly Eucalypti), April 16, 1913 (H. Hacker).

Habitat: Brisbane, Queensland.

Type: No. *Hy 2581*, Queensland Museum, Brisbane, thorax on a tag, head and abdomen on a slide.

7. SELITRICHODELLA AURIVENTRIS new species.

Female:—Length, 1.10 mm.

Same as *sulfureiventris* but the whole head is golden yellow, the abdomen longer than the thorax, the funicle joints longer, thus 3 is nearly twice longer than wide (plainly not so in the other species) and on the propodeum the carina along the mesal side of the spiracle is crescentic, joining the opposite carina at each end while in the other species it is not regularly curved and diverges more or less cephalad, the opposite carina curving correspondingly with it. And the mandibles are distinctly tridentate. Propodeum with a median carina.

From one female captured by sweeping along edge of jungle, May, 1913 (A. P. Dodd).

Habitat: Kuranda, Queensland.

Type: No. *Hy 2582*, Queensland Museum, Brisbane, the specimen on a slide.

GENUS SELITRICHODES Girault.

The scutellum bears four sulci.

1. SELITRICHODES FASCIATIVENTRIS Girault.

Length, 1.20 mm. The two black abdominal stripes are somewhat proximad of middle. A more or less obscure dusky spot near the tegula. Funicle joints subequal, subquadrate; club slightly longer than the funicle. The types were reared from galls on Eucalyptus and are four females on a slide. The scutellum bears *four* sulci. Types re-examined.

2. SELITRICHODES MORUM (Girault).

Removed from *Tetrastichodes* which see. Type re-examined. Funicle 2 distinctly shorter than 3; stigmal vein over half the length of the marginal.

3. SELITRICHODES FLAVISCUTELLUM (Girault).

Removed from *Syntomosphyrum*. Type re-examined; it consists of the female taken at Ayr, Queensland. The ring-joints have not been verified.

4. SELITRICHODES DARWINI new species.

Female:—Length, 0.80 mm.

Black, the wings hyaline, the head suffused with yellow, the cephalic femora, the trochanters, knees, tibiæ, tarsi and antennæ white. Mandibles distinctly tridentate. Scutum very long. Pedicel somewhat longer than funicle 1 which is a little longer than wide, much larger than either of the other funicle joints which are small and narrow, joint 2 a little wider than long, 3 subquadrate, not quite half the length of 1 and distinctly narrower; club longer than the funicle, without a distinct terminal seta. Scape slightly compressed. Discal cilia of fore wing fine and dense, the blade large, obtusely rounded at apex. Tarsal joints short.

Differs from *morum* in that the stigmal vein is short (very long in *morum*), the body more robust and the color different.

From one female taken from window of a granary, October 6, 1911.

Habitat: Roma, Queensland.

Type: No. *Hy 2583*, Queensland Museum, Brisbane, the female on a slide.

5. SELITRICHODES ROTUNDIVENTRIS new species.

Female:—Length, 0.55 mm. Short, robust, the abdomen nearly round.

Black or brown-black, the head, legs, antennæ, lateral margins of scutum, mesopleura, scutellum and (less distinctly) the base of abdomen across from margin to margin, bright lemon yellow. Hind coxa blackish, the hind femur a little dusky laterad at middle, the legs pallid.

Pedicel distinctly longer than funicle 1 which is subquadrate, longer than 2 which is narrower and subquadrate, 3 like 2 but shorter, hence wider than long. Mandibles with three acute teeth. Stigmal vein shorter than with *morum* which this species resembles in form.

This species resembles closely *flaviscutellum* Girault but the fore wings are narrower, the base of the abdomen yellowish, the cephalic margin of scutum not yellow, the hind femur not dusky along proximal half and the abdomen is rounded, not cylindrical (though obtuse at apex) as in *flaviscutellum*.

From one female captured in forest, December 24, 1912.

Habitat: Capeville (Pentland), Queensland.

Type: No. *Hy 2584*, Queensland Museum, Brisbane, the specimen on a slide.

Genus NEOTETRASTICHODES Girault.

Antea, p. 228, line 2, *Girault* should read *Ashmead*; line 3, the word *male* should precede the word *female*.

1. NEOTETRASTICHODES FLAVUS Girault.

Length of female, 1.80 mm.; of male, 1.30 mm. The types were captured by sweeping grass in forest, April 30, 1912. The types are one pair on a slide.

2. NEOTETRASTICHODES SILVENSIS (Girault).

Removed from *Ootetrastichus*. Type re-examined. The following descriptive notes from a second female from the type locality, forest, April 3, 1914 are correct:—

Length, 1.30 mm.

Æneous green, the wings hyaline, the scape, legs except the concolorous hind coxa and somewhat over proximal third of abdomen creamy white; rest of abdomen dark metallic purple. Lateral margin of abdomen at base for a short distance metallic purple; proximal margin of purple of abdomen (dorsal aspect) rather deeply concaved (so that at the margins, the purple proceeds nearer to base than at center). Mandibles tridentate, the third tooth broad, obliquely truncate. Funicle 1 shorter than the club, longest, about two and a fourth times longer than its greatest width, 2 somewhat shorter than it, 3 a fourth shorter than 1, slightly longer than the pedicel. Cheeks short. Abdomen conic-ovate, somewhat longer than the thorax. Propodeum with a distinct median carina and what appears to be two lateral carinæ running to base of caudal coxa from each side of the spiracle and not side by side (probably due to an impression due to drying, thus giving the appearance of two carinæ). Propodeum finely reticulated; rest of thorax with the usual very fine longitudinal sheening of the group. Abdomen pointed at tip. Club with a very short nipple, the three joints not much unequal. Scape normal.

3. NEOTETRASTICHODES MAXIMUS new species of A. P. Dodd and A. A. Girault.

Female:—Length, 2.30 mm.

Very dark metallic blue, the coxæ and femora concolorous; rest of legs and antennal scape golden yellow, rest of antennæ black. Fore wings hyaline. Stigmal vein with a distinct knob, postmarginal vein two thirds length of stigmal. Abdomen short and stout, convex above, straight beneath. Scutum and scutellum naked. Propodeum almost smooth, glabrous, not very short, with a median carina. Scape scarcely compressed; pedicel not elongate, subequal to funicle joint 2, 1 a little larger than 2, 3 a little smaller; club not much shorter than the funicle, the joints about subequal; ring-joints large and distinct.

From one female caught by sweeping in jungle, August 7, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2585*, Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

4. NEOTETRASTICHODES ROBUSTUS new species of A. P. Dodd.

Female:—Length, 2.10 mm. Robust.

Dark metallic green, the coxæ concolorous, the rest of legs and antennal scape bright golden yellow; pedicel and ring-joints brownish, rest of antennæ black. Wings stained yellowish. Thorax with scattered bristles. Propodeum rather short and broad, with a median carina. Abdomen conic-ovate, straight above, convex beneath. Scape slender, normal; pedicel elongate; funicle 1 distinctly longer than pedicel, nearly four times as long as wide, 2 no longer than the pedicel, 3 shorter; club no longer than funicle 1, with a short terminal nipple; ring-joints not large.

From one female taken from a window, Cooktown, February 3, 1912 (A.A.G.).

Habitat: Cooktown, Ayr, Ingham and Herberton, Queensland.

Type: No. *Hy 2586*, Queensland Museum, Brisbane, the Cooktown specimen on a tag, the head on a slide.

Also a female was taken from a window, Ayr, November 7, 1912; one from a window, Ingham, February 16, 1913; and another from a window, Herberton, December 28, 1913 (A.A.G.).

5. NEOTETRASTICHODES MERIDIALIS new species of A. P. Dodd.

Female:—Length, 1.65 mm.

Very similar to *robustus* Dodd but smaller, the hind coxæ golden yellow, the flagellum wholly yellow-brown; wings hyaline; propodeum not short; pedicel as long as the elongate first funicle joint; club longer than funicle 1.

From one female from a window of a wool-store, October 3, 1911 (A. A. Girault).

Habitat: Brisbane, Queensland.

Type: No. *Hy 2587*. Queensland Museum, Brisbane, the female on a tag; head on a slide.

6. NEOTETRASTICHODES MERIDIANUS new species.

Female:—Length, 1.40 mm.

Similar to *maximus* Dodd and Girault and *æneus* Girault differing from the former in not being very dark, black or nearly, but dark metallic green like *æneus*; also the fore wings are smaller, the antennæ dusky yellowish not black (except scape) and they are less robust. The tibiæ are all straw yellow, the femora concolorous. Differs from *æneus* in having the femora concolorous and the pedicel somewhat less elongate. The pronotum is long, the upper thorax naked in all three species.

From two females on a card labelled "No. 27, Nat. Mus., Victoria. From galls on gum. 11.94."

Habitat: Melbourne, Victoria.

Type: No. *Hy 2588*, Queensland Museum, Brisbane, the two specimens on a card, a head on a slide.

7. NEOTETRASTICHODES PERKINSI new species.

Female:—Length, about 1.15 mm.

Pale golden yellow, the wings hyaline, the body marked with small black spots as follows: Three marginal spots (wider than long) on proximal half of abdomen and a minute dot caudad of the third; a longer than wide, small spot on pronotum caudo-laterad, one just mesad of tegula and one on lateral propodeum, the three in a line caudo-cephalad but the line obliqued a little caudo-mesad. Antennæ as in *Ootetrastichus beatus* Perkins. First and fourth ring-joints large, the inner two transverse-linear. Form like *Ootetrastichus*. Pedicel subequal to funicle 3, club 1 longest. Funicle 3 much longer than wide. Mandibles tridentate. Tip of valves of ovipositor black.

From one female taken by sweeping jungle along a forest streamlet, January 3, 1913 (A. P. Dodd).

Habitat: Gordonvale, Queensland.

Type: No. *Hy 2589*, Queensland Museum, Brisbane, the specimen on a slide.

8. NEOTETRASTICHODES ELECTRA new species.

Female:—Length, 2 mm.

Black, the wings hyaline; ventral half of head, tegulæ, scape except dorsad at tip, postscutellum and abdomen golden yellow, the legs a little embrowned. Caudal coxa black. Stigmal vein rather short. Abdomen dorsad black across base narrowly, the black acutely produced caudad at meson; the tip black and between tip and base there are five complete cross-stripes, the first three connected along meson by a rather broad longitudinal stripe. Dorsum of abdomen scaly. A yellow spot at occipital margin of vertex against the eye, laterad of lateral ocellus. Thorax rather coarsely scaly, a line of setigerous punctures along lateral margin of scutum, the latter otherwise naked. A short sulcus at mesal base of scutellum, the second lateral sulcus foveate, the surface like that of the scutum. Propodeum scaly, moderate at the meson, without lateral carinæ but with a median one and a short carina directly from the spiracle. The short third club joint with a short, distinct spur. Funicle 1 somewhat longer than wide, the others each shortening, 3 oval, a little shorter than the pedicel. Wings broad.

From one female caught October 11, 1914 (H. Hacker).

Habitat: Brisbane, Queensland.

Type: No. *Hy 2590*, Queensland Museum, Brisbane, the specimen on a tag; antenna on a slide.

Genus NEOMPHALOIDES Girault.

This genus is the same as *Ootetrastichella* but the scutum bears a median groove and the club is 3-jointed.

1. NEOMPHALOIDES STYLATUS new species.

Female:—Length, 2.20 mm. Abdomen conic-ovate, distad produced into a short stylus, the ovipositor extruded a short distance beyond the stylus. Abdomen distinctly much longer than the thorax.

Black, shining, the wings hyaline, the scape, knees, tibiæ and tarsi yellowish brown, also the venation. Antennæ long; funicles 1 and 2 subequal, each about two and a third times longer than wide and distinctly shorter than the long club, 3 a little shorter than 2, distinctly longer than the pedicel. First two club joints plainly longer than wide, the third somewhat shorter, with a distinct terminal nipple. Club as long as the scape. Mandibles tridentate, the two inner teeth together. Stigmal vein of moderate length. Second two ring-joints very short. Thoracic sulci very distinct. Scutum with a row of setæ along lateral margin, otherwise naked. Propodeum finely wrinkled, tricarinate, rather long, the lateral carina forking at apex; an oblique ridge or carina running meso-cephalad from origin of the fork of the lateral carina, but not quite complete at either end. Lateral margin of propodeum carinated. Scutellum with a tinge of metallic green. Abdomen subpetiolate.

Differs from the genotype in that the stylus of the abdomen is not half as long as in that species. The latter is shorter at propodeal meson and has no lateral carina and nearly half the body of its abdomen is red, the body shiny, the sculpture rather faint. Its other colors are also much different.

From one female caught in jungle, August 20, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2591*, Queensland Museum, Brisbane, the specimen on a tag; head on a slide.

GENUS EPITETRASTICHUS Girault.

The name *Pentastichodes* is naked and without standing in nomenclature.

1. EPITETRASTICHUS SPECIOSISSIMUS Girault.

The type specimen was captured in grass near a canefield, Babinda, October 29, 1911. The sixth abdominal marginal spot is open laterad, the first at base joined across meson. The conical marking of scutum may go only to apex of that part. One female, Gordonvale, forest, August 8, 1914.

2. EPITETRASTICHUS FLAVIPOSTSCUTELLUM Girault.

Length, 1 mm. Wings hyaline. Type female was captured December 27, 1913 by sweeping in the forest along Cape River; it is on a tag, the head on a slide.

3. EPITETRASTICHUS XANTHER (Girault).

A common forest species. *Antea* (these memoirs, II), p. 200, line 1 under this species, *face* should read *occiput*. The species is distinct from *nigriventris*. The thoracic pleura are often suffused with dusky, the cross-stripes of abdomen are regular, often alternately less broad or slightly incomplete laterad. Funicle joints subequal to each other and to the pedicel. The club bears a short nipple. Propodeum short at the meson, there with a median carina. A female in the type locality, November 8, sweeping edges of a forest streamlet.

"The black stripes across the abdomen are often obscure and suffused. One female, Rossville (Cooktown), Queensland, February 23, 1912, sweeping jungle along a roadside (A.A.G.) and another from forest, Meerawa, Queensland, July 26, 1913 (A.A.G.)"—A. P. Dodd.

A. EPITETRASTICHUS XANTHER HILLI new variety.

Like *xanther* but the abdomen has but four cross-stripes commencing from proximal fourth, at base yellow; the body is smaller and the postscutellum yellow. Funicle 1 is also a little longer than the others, 3 subglobular. Antennæ yellowish, also scutellum. Propodeum with a median carina but no true lateral one.

From one female taken from bushes, October 10, 1913 (G. F. Hill).

Habitat: Port Darwin, Northern Territory.

Type: No. *Hy 2592*, Queensland Museum, Brisbane, the female on a tag.

4. EPITETRASTICHUS LONGFELLOWI Girault.

Synonyms: *Epomphaloides viridis*, Girault; *Epitetrastichus nympha* Girault.

The median carina of propodeum forks only at apex and is quite solid. The abdomen has no petiole. Type re-examined.

The median carina of propodeum in this species and in *nympha* broadens just before distal end into a fork but the latter is solid; the oblong propodeal spiracle is near lateral margin, its long axis caudo-cephalad. Both are the same yet the caudal wings in *nympha* are slightly narrower and there is no yellow on the abdomen. The species *æneithorax* differs from both in having the scutum naked and as otherwise indicated. Types re-examined.

Dark metallic purple; legs bright golden yellow, the cephalic coxæ suffused with metallic; antennal scape yellow, pedicel brown, rest black. Wings hyaline. Scutum with scattered bristles from setigerous punctures; median groove of scutum complete, narrow. Propodeum moderately short, with fine scaly sculpture; lateral carinæ absent; median distinct.

Pedicel slender; funicle 1 little longer than pedicel, fully three times as long as wide; 2 one half the length of 1, 3 slightly shorter than 2; club somewhat shorter than funicle 1; ring-joints small about subequal. Notes from the following specimens:

A female captured from a window at Mirani (Mackay), October, 1911. The abdomen in this last specimen was suffused with brown; median groove of scutum complete, very narrow; club pale. Compared with type. A female at Ayr, Queensland, forest, November 6, 1912. One female, Cooktown, window, February, 1912.

5. EPITETRASTICHUS VARICOLOR new species of A. P. Dodd.

Female:—Length, 1.75 mm.

Golden yellow; occiput, parapsidal furrows, grooves of scutellum and propodeum dark brownish; abdomen nearly wholly dusky dorsad; legs and antennal scape pale yellow, rest of antennæ black. Body slender, the abdomen slender, pointed conic-ovate. Median groove of scutum faint but complete. Propodeum rather short, scaly, with a pair of median carinæ. Wings hyaline. Flagellum very long and slender, funicle 1 somewhat longest of the funicle, twice as long as pedicel, club somewhat longer than any of the funicle joints, the second joint a little longer than the first, the third small.

From one female caught by sweeping in forest, June 13, 1912 (A.A.G.).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2853*. Queensland Museum, Brisbane, the female on a tag; head on a slide.

"This species is very similar to *Aprostocerella kelloggi* Girault but has only a little blackish on cephalic scutum at cephalic margin centrally, the propodeum is wholly black (yellow laterad of spiracle in *kelloggi*) and somewhat longer at the meson and the pronotum is broadly black across the meson nearly to the lateral margins. Only the face of pronotum is black in *kelloggi* and in this last species the cephalic half of scutum is blackish except along median line at lateral margins. Types compared." (A. A. Girault.)

6. EPITETRASTICHUS BICOLOR (Girault).

Tetrastichus bicolor Girault in *antea*.

Female:—Length, 1.65 mm.

Black; lower part of face, an area at insertion of wings, postscutellum, basal third or more of abdomen, legs (except base of hind coxæ) and antennal scape golden yellow; pedicel dusky, flagellum fuscous; rest of abdomen brownish with darker cross stripes. Propodeum with a median carina. Median groove of scutum not very distinct. Abdomen conic-ovate, somewhat wider and longer than thorax. Funicle joints cylindrical ovate, 1 as long as pedicel and distinctly longer than wide, 3 a little shorter than 1, the first club joint as long as the other two combined. Fore wings broad, hyaline.

From one female captured by sweeping in strip of jungle, April 16, 1913 (A. P. Dodd), type locality.

7. EPITETRASTICHUS LONGICLAVUS new species of A. P. Dodd.

Female:—Length, 1.60 mm.

Agreeing with *longfellowi* Girault but differing as follows: All legs and antennal scape and pedicel intense lemon yellow; abdomen almost wholly dark brown, slightly suffused with metallic, funicle 3 only slightly shorter than 1 and a little longer than the pedicel, club much longer than funicle 1, the first two club joints distinctly longer than wide (in *longfellowi*, the second funicle joint is subequal to the pedicel, 3 distinctly shorter, the original description

being erroneous; and scarcely more than half as long as 1, the club no longer than funicle 1, the first two club joints being wider than long). Propodeum with a weak curved carina mesad of the spiracle. Compared with type of *longfellowi*.

Habitat: Queensland.

Type: No. *Hy 2594*, Queensland Museum, Brisbane, the female on a tag; head on a slide.

8. EPITETRASTICHUS FLAVISCAPUS new species of A. P. Dodd.

Female:—Length, 1.65 mm.

Dark metallic green, the coxæ and femora concolorous, the tibiæ, tarsi and antennal scape, golden yellow, rest of antennæ black. Wings hyaline. Scutum and scutellum naked. Propodeum rather long, coarsely scaly, with distinct median and lateral carinæ. Abdomen conic-ovate, no longer than the thorax. Pedicel somewhat shorter than the first funicle joint; funicle joints subequal, cylindrical ovate, half longer than wide. Club as large as two preceding joints united, with a short terminal nipple; last three ring-joints very small.

From one female captured in jungle, January 15, 1914 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2595*, Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

9. EPITETRASTICHUS HETÆRICOS new species.

Female:—Length, 1.80 mm.

Very similar to *speciosissimus* but differing in that the large conical marking of the scutum is regular (not rather suddenly narrowed at a little over distal half of scutum) and extends nearly to apex of scutellum, the pronotum is black except laterad and the caudal margin very narrowly (only face of pronotum is black in the other species, not as originally described), the hind femur centrally is dark brown, the occiput is all black except ventral border, the scrobes are black and the hind coxæ exteriorly, the third marginal spot on the abdomen is smaller (the first spots joined across meson in both species and situate at base), also each of the following spots; and the metapleurum and caudal mesoplenrum are black (not so in the other species, contrary to former statements). Antennæ dusky black except proximal two thirds of scape. The propodeum is a little visible at meson from above, bears a very short complete median carina but no true lateral ones. The cephalic, subquadrate black area on each axilla is decidedly longer in this species extending nearly to apex from cephalic margin, longer than wide (in the genotype nearly square and extending slightly caudad of middle). Stripe 6 of abdomen (just before apex) is merely broadly joined to 5 along the meson. A row of faint punctures along lateral margin of scutum in both species. Funicle 3 a little longer than wide. Mandibles tridentate, the teeth obtuse.

From one female caught in forest, August 13, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2596*, Queensland Museum, Brisbane, the specimen on a tag with type of *speciosissimus*, the head on a slide. The female type of the genotype is on a tag, the head on a slide.

10. EPITETRASTICHUS X-CARINATUS new species.

Female:—Length, 1.50 mm.

Orange yellow, the distal third of scutum (or the part not black), scutellum between the lateral grooves, legs and scape pale lemon yellow; a rounded orange yellow area in center of scutellum. The following parts black: Head, prothorax, cephalic two thirds of scutum, propodeum except broadly along the meson and lateral margins of abdomen rather broadly from base to distal three fourths; also tip of abdomen and apex of each parapside. Postscutellum

lemon yellow. Propodeum with an X-shaped median carina, the cephalic pair of arms longer and curving mesad (*i.e.* convex, not concave); no true lateral carina, the surface scaly. Second ring-joint very short. Flagellum dusky brownish. Funicle 1 plainly shorter than the club, plainly longer than wide, 3 subequal to the pedicel, somewhat longer than wide. Club with a small terminal nipple. Mandibles tridentate (at least one). Somewhat like *Neomphaloidella saltensis* but the scutellum is not mostly black and so on.

From one female caught at 1,000 feet in jungle, May 27, 1914 (A. P. Dodd).

Habitat: Upper Tweed River, New South Wales.

Type: No. *Hy 2597*, Queensland Museum, Brisbane, the specimen on a tag, the head with slide type of *Tetrastichodes susurrus* Girault.

11. EPITETRASTICHUS FILIFORMIS new species.

Female:—Length, 1.65 mm., excluding ovipositor which is extruded for two thirds the length of the abdomen, the latter conical, a third longer than the rest of the body. Head longer than wide, oval.

Dark metallic green, the knees, tibiæ and tarsi pale yellow, the wings hyaline. Propodeum finely scaly, short at meson, there with a median carina, true lateral carinæ absent but a weak carina directly from the spiracle and adjoining a long-oval fovea mesad. Antennæ slender, filiform, the scape and funicle 1 elongate, the scape the longer of the two; pedicel not twice longer than wide at apex, less than half the length of funicle 1 which is subequal to the club; funicle 3 over thrice longer than wide, not quite two thirds the length of 1, longer than club 1 which is nearly twice longer than wide; club with a minute terminal nipple. Mandibles tridentate. Stigmal vein of moderate length. Scutum practically naked.

From one female caught in forest (1,500 feet), May 17, 1914 (A. P. Dodd).

Habitat: Upper Tweed River, New South Wales.

Type: No. *Hy 2598*, Queensland Museum, Brisbane, the specimen on a tag; head on a slide with slide type of *Selitrichodella cometes* Girault.

12. EPITETRASTICHUS COBDENI (Girault).

Tetrastichus cobdeni Girault.

Much like *bicolor*. Propodeum scaly. Ocellar area black; postscutellum bright lemon yellow. Tegulæ yellow. Propodeum without true lateral carinæ but a convex narrow carina just mesad of spiracle, the median carina distinct, its proximal half narrowly prongshaped; a line of punctures down lateral margin of scutum, the latter otherwise naked. Type re-examined.

13. EPITETRASTICHUS DARWINI (Girault).

Tetrastichus darwini Girault.

Median groove of scutum only at cephalic third. The club is long, cylindro-conic. Funicle 3 a little the longest. Face only of pronotum blackish, not the narrow dorsum. Propodeum with a median carina only, concolorous laterad and caudad of the spiracle. Scutum naked or nearly so. Type re-examined.

14. EPITETRASTICHUS MARGIVENTRIS (Girault).

Tetrastichus margiventris Girault.

Resembles somewhat *Neomphaloidella westwoodi* which has the abdomen similarly colored but the antennæ are different. Funicle 1 over four times longer than wide. Scutum naked. Type re-examined. It was captured December 2, 1912.

15. EPITETRASTICHUS ÆNEITHORAX new species.

Female:—Length, 1.35 mm.

Like *longfellowi* but the front coxa also orange yellow, together with the tegula, part of *mesopleurum* ventrad of it, part of metapleurum above and cephalad of hind coxa, sides of base of abdomen and venter of abdomen along distal half; body otherwise dark æneous green except scape, the pedicel dusky. Funicles 1 and 2 more or less subequal, distinctly shorter than the club, 3 a little shorter, longer than the pedicel. Scutum naked.

Described from one female captured in the jungle, December 4, 1913 (A. P. Dodd).

Habitat: Kuranda, Queensland.

Type: No. *Hy 2599*, Queensland Museum, Brisbane, the above specimen on a tag, the head on a slide.

16. EPITETRASTICHUS POSTSCUTELLATUS new species of Girault and A. P. Dodd.[8]

Female:—Length, 1.35 mm.

Black, suffused with brown, the postscutellum lemon yellow, the wings hyaline, the abdomen brown with many cross-stripes of black, the legs, lower face and antennæ lemon yellow, the hind coxa black. Propodeum with a median carina and no others. Mandibles tridentate. Funicle 1 cylindrical oval, longest but not much longer than wide, 2 subequal to the pedicel, 3 oval, a little longer than wide; club with a short terminal spine. Pedicel dusky above. Scutum and scutellum not hairy, nearly naked.

Male:—Not known.

Described from one female captured by sweeping forest vegetation, summit of Pyramid Mountain (3,000 feet), August 17, 1912.

Habitat: Mulgrave River (Gordonvale, near Cairns), Queensland.

Type: No. *Hy 2600*, Queensland Museum, Brisbane, the above specimen on a tag, the head on a slide.

A. EPITETRASTICHUS POSTSCUTELLATUS ATRELLA new variety of A. P. Dodd.

Female:—Length, 1.40 mm.

Similar to *postscutellatus postscutellatus* Girault and Dodd but the thorax wholly uniformly black.

From one female captured on summit of Mount Pyramid, 3,000 feet, August 17, 1912 (A.A.G.).

Type: No. *Hy 2601*, Queensland Museum, Brisbane, the specimen on a tag.

In both varieties the cross-stripes on the abdomen are obscure.

17. EPITETRASTICHUS 6-GUTTATIVENTRIS new species.

Female:—Length, 1.30 mm.

Black, the legs white except coxæ, proximal two thirds of caudal femur, proximal fourth of other femora and distal two tarsal joints. Sides of abdomen at base (dorsal half) and three elliptical (long axis transverse) spots on each side of meson dorsad, proximal third from base, golden yellow, the spots not prominent, the distal pair smallest; each spot is nearer lateral margin than to meson. Antennæ wholly black; pedicel subequal to funicle 3, funicle 1 distinctly longer but shorter than the club; funicle 3 somewhat longer than wide. Club with a short but distinct terminal spine, joint 3 shortest. Propodeum scaly, moderately short at the meson, there with a carina, true lateral carinæ absent. Stigmal vein rather long. Mandibles with two distinct teeth and a third distinctly indicated but short and obtuse. Second ring-joint very short.

From one female captured by sweeping in forest, May 18, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy. 2602*, Queensland Museum, Brisbane, the specimen on a tag; head on a slide.

[8] Probably a variant of *cobdeni*.

18. EPITETRASTICHUS CRESSONI new species.

Female:—Length, 1.55 mm.

Deep orange yellow, the abdomen with three dusky cross-stripes within proximal half, the first some little distance out from base, the distal one about across the middle. Funicle and club black. Tip of scape and dorsal pedicel dusky. Wings hyaline. Tip of valves of ovipositor, center of pronotum (including the neck), tegulæ and a minute dot at extreme latero-caudal angle of pronotum, dusky blackish. Mandibles tridentate. Pedicel rather long, subequal to funicle 3 which is distinctly longer than wide. Funicle 1 about one and a half times longer than wide, somewhat longer than the pedicel, subequal to 2, shorter than the club whose third joint is shortest and with a terminal spine. Club 1 a little shorter than funicle 3. Postscutellum lemon yellow. Propodeum scaly, without lateral carinæ, the median present, complete, not long.

From one female captured in forest, May 20, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2603*, Queensland Museum, Brisbane, the female on a tag; head on a slide.

Named for Ezra Townsend Cresson.

19. EPITETRASTICHUS BURMEISTERI new species.

Female:—Length, 1 mm.

Dark metallic purple, the wings hyaline, the legs (except proximal half of coxæ), a little over proximal half of abdomen and the antennæ golden yellow, the yellow of abdomen dorsad with three purple cross-stripes, the proximal one fainter. Funicle joints subequal, subglobular, a little wider than long, shorter than the pedicel; club large, ovate, its third joint short, wider than long, shorter than the stout terminal spine. Third tooth of mandible much shorter, obliquely truncate, the outer two rather long, acute. Tegula golden yellow. Propodeum short at the meson (carinæ not seen). Stigmal vein short. Posterior wing with six lines of discal cilia where widest. Distal three ring-joints very short.

From one female labelled "Pt. Darwin, 10-10-13. Forest. G. F. Hill."

Habitat: Port Darwin, Northern Territory.

Type: No. *Hy 2604*, Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

Dedicated to Hermann Burmeister.

Genus QUADRASTICHUS Girault.

1. QUADRASTICHUS SANNIO Girault.

This species belongs to the genus *Paraprostocetus* which see.

2. QUADRASTICHUS FUSCUS (Girault).

Length, 0.70 mm. *Antea*, under this species, line 4, *ring-joints* should be in the singular number. The type is on a slide and was collected from a window, March 20, 1913. The original description is in error in regard to funicle 3 which is also ring-like but larger than 2.

Genus NEOMPHALOIDELLA Girault.

1. NEOMPHALOIDELLA KURANDENSIS (Girault).

From *Aprostocetus*. The types are five females on a card and a slide with appendages. They were reared from braconid cocoons. Head with scattered thimble punctures. In the male, the femora are paler, the antennæ with four funicle, two club joints. The female measures 2 mm.

Propodeum of moderate length, the lateral carina forked at apex, the fork solid. The punctures of head are on the vertex and dorsal half of face. At the ventral end of each

eye, the face is gently inflexed, the portion ventrad being on a lower level than the dorsal part (the latter bearing the punctures). The caudal femur is concolorous, the others more or less fuscous. Second two ring-joints very short. Segment 2 of abdomen reticulated. Face narrows below the eyes (cephalic aspect) somewhat as in *Atoposoma* but the vertex is not elevated. A number of females were reared July 5, 1912 from *Apanteles* cocoons on a blade of grass, forest, Gordonvale, Queensland. Types re-examined.

2. NEOMPHALOIDELLA SULCATA new species of Girault and A. P. Dodd.

Female:—Length, 2.30 mm.

The same as *ænea* but the femora also concolorous, the tibiæ brownish. Pedicel and rest of antennæ black. Median groove of scutum complete. Propodeum distinctly tricarinate, the spiracle laterad of the lateral carina. Pedicel of usual length (as in *ænea*), but the flagellum stouter, the distal funicle joint distinctly shorter than the proximal, about a fourth longer than the pedicel; funicle 1 somewhat over twice longer than wide; joint 2 intermediate in length. Agreeing otherwise with *ænea*. Mandibles tridentate. Club plainly 3-jointed, with a short, terminal seta, the first joint longest, longer than wide.

Described from one female caught by sweeping grass and foliage on edge of jungle, along the Mulgrave River, March 30, 1913 (A. A. Girault).

Habitat: Northern Queensland (Gordonvale, near Cairns).

Type: No. *Hy 2605*, Queensland Museum, Brisbane, the above specimen on a tag, the head on a slide.

Later, a female was found from Thursday Island, Torres Strait, collected in forest, March 11, 1912.

3. NEOMPHALOIDELLA METALLICA new species of Girault and A. P. Dodd.

Female:—Length, 2 mm.

Color as in *Epitetrastichus longfellowi*, metallic green. Wings hyaline. Median groove of scutum complete. Scutum and scutellum without bristles. Propodeum rather long, with a distinct neck, shining, rugose, carinated posteriorly; median and lateral carinæ present, distinct. Antennæ as in *longfellowi* but the first ring-joint is distinctly larger than the other two.

Described from one female caught by sweeping in heart of jungle, 1,500 feet, September 12, 1913 (A. P. Dodd).

Habitat: Northern Queensland (Kuranda, near Cairns).

Type: No. *Hy 2606*, Queensland Museum, Brisbane, the above specimen on a tag, the head on a slide.

"The propodeum in this species bears several irregular, weak carinæ, both longitudinal and transverse and laterad of the lateral carina is rugulose; the irregular carinæ are not numerous, most of the space between median and lateral carinæ polished." (A. A. Girault).

4. NEOMPHALOIDELLA IO Girault.

One female, forest, Mount Pyramid opposite Gordonvale, Queensland, 2,500-3,000 feet, June 2, 1913 (A. P. Dodd).

"This specimen differed from the type in having the marginal stripe of abdomen much broader; also funicle 3 was barely as long as the pedicel. The type antenna has funicle 3 only a little longer than the pedicel, not much longer as given in the original description." (A. P. Dodd).

5. NEOMPHALOIDELLA PERPULCHRA new species.

Female:—Length, 1.35 mm.

Dark æneous green, the wings hyaline; the head (except occiput medially above), pronotum (except at meson), propleura, tegulæ, legs (except proximal third of hind coxæ) and abdomen, intense lemon yellow, also apex of pedicel, the antennæ otherwise dark blackish green. Abdomen with three metallic green cross-stripes close together (commencing at proximal fourth) and joined more or less along the meson and along each margin, the third stripe at meson giving off a short mesal longitudinal stripe which proceeds distad to a level with two round spots on each side of the meson (at about apex of proximal three fourths); a rather broad, dark green stripe across just before tip of abdomen. Propodeum similar in sculpture to rest of thorax, short at the meson; a pair of median carinæ diverging at once and following the caudal margin; propodeal spiracle in an ovate impression, there being no true lateral carinæ. Mandibles tridentate, the two outer teeth acute. Pedicel longer than any of the funicle joints of which 1 is longest, somewhat longer than wide, 3 distinctly wider than long, 2 somewhat wider than long; club rather stout, without a conspicuous terminal nipple, practically with none at all. A line of obscure thimble punctures along lateral margin of scutum and on the scutellum just outside (laterad) of the first groove.

Described from one female caught by sweeping foliage in forest, November 30, 1913 (A. A. Girault).

Habitat: Northern Queensland (Gordonvale near Cairns).

Type: No. *Hy 2607*, Queensland Museum, Brisbane, the above female on a tag, the head on a slide.

6. NEOMPHALOIDELLA PARVULA new species of A. P. Dodd.

Female:—Length, 1 mm.

Very dark metallic green, the coxæ and femora concolorous, rest of legs and antennal scape golden yellow, rest of antennæ dusky black. Fore wings broad, hyaline. Abdomen short, triangular, the apex of the triangle ventrad. Scutum and scutellum naked; median groove of scutum very narrow. Propodeum short and broad, sculptured like the rest of the thorax, with a median carina. Pedicel subequal to funicle 3 which is not twice as long as wide, 2 subequal to 3, 1 somewhat shorter; club nearly as long as the funicle, first two club joints subequal; flagellum with sparse long, thin hairs.

From one female taken in jungle, 800 feet, September 13, 1913 (A. P. Dodd).

Habitat: Kuranda, Queensland.

Type: No. *Hy 2608*, Queensland Museum, Brisbane, the female on a tag, the head on a slide.

7. NEOMPHALOIDELLA BRUNNEA new species of A. P. Dodd.

Female:—Length, 1.65 mm.

Biscuit brown; the occiput, scutum, center of scutellum and dorsum of abdomen darker; margins of eyes, legs (except hind coxæ) and antennal scape pale lemon yellow, rest of antennæ yellow-brown. Wings hyaline. Abdomen nearly twice as long and somewhat wider than the thorax, convex above, straight beneath. Scutum and scutellum naked; median groove of scutum complete, distinct. Propodeum not long, sculptured like the rest of the thorax, with a pair of median carinæ. Pedicel no longer than funicle 3, 1 a little the longest, not much longer than wide, club as long as two preceding joints united, without a terminal spine; first club joint as long as the other two combined.

From one female captured sweeping along jungle-edged forest streamlet, January 3, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2609*, Queensland Museum, Brisbane, the specimen on a tag; head on a slide.

8. NEOMPHALOIDELLA FLAVICORNIS new species of A. P. Dodd.

Female:—Length, 1.5 mm.

Dark metallic green, the abdomen brownish, the legs and antennal scape golden yellow, rest of antennæ yellow-brown. Median groove of scutum very narrow, incomplete. Scutum and scutellum naked. Propodeum finely scaly, short at the meson, with a median carina. Abdomen a little longer than head and thorax united. Wings hyaline. Mandibles tridentate. Pedicel and funicle joints subequal, each two thirds longer than wide; club somewhat wider than funicle, twice as long as wide, with a short nipple; first two club joints about equal, 3 smaller; second and third ring-joints small.

From one female captured by sweeping jungle along roadside, Rossville, February 23, 1912 (A.A.G.).

Habitat: Rossville (Cooktown), Queensland.

Type: No. *Hy 2610*, Queensland Museum, Brisbane, the specimen on a tag; head on a slide.

9. NEOMPHALOIDELLA QUADRIFASCIATA new species.

Female:—Length, 0.80 mm.

Golden yellow, the wings hyaline; apex[1] of parapsides and of axillæ, propodeum and four very distinct, rather narrow cross-stripes on abdomen, jet black, the abdominal stripes distributed over most of the dorsum. Mandibles tridentate. Funicle joints not long. Center of occiput black. Last two ring-joints very short. Propodeum with a median carina, the lateral carinæ most probably absent.

From one female reared from gall on wattle, January 8, 1914 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2611*, Queensland Museum, Brisbane, the female on a tag.

10. NEOMPHALOIDELLA BOUSSINGAULTI new species.

Female:—Length, 1.25 mm.

Similar to *quadrifasciata* but more robust and the cephalic margin of scutum except at each end and a spot on base of scutellum at meson are also black; also the apex of each parapside is more broadly black and more than half of each axilla. The black markings are submetallic in both species. The spot on the scutellum is longer than wide and does not extend to the first groove. Scape dusky at distal half, pedicel so above at base; rest of antenna dusky; funicle joints subquadrate, subequal, each somewhat shorter than the pedicel. Propodeum with a median carina and no others.

From one specimen taken in forest, 1,500 feet, June 2, 1913 (A. P. Dodd).

Habitat: Mount Pyramid (Cairns), Queensland.

Type: No. *Hy 2612*, Queensland Museum, Brisbane, the specimen on a tag.

11. NEOMPHALOIDELLA PALLIDICAPUT new species.

Female:—Length, 1.15 mm.

Black with a submetallic lustre, the wings hyaline; upper occiput dark; legs except most of hind coxa, the head, the abdomen and the antennæ, pale lemon yellow. Distal third of abdomen metallic green and two rather broad cross-stripes of same in the intermediate third of same, also a less distinct cross-stripe still farther proximad; prepectus and vicinity of wing insertion also lemon yellow. Antennæ suffused with dusky; pedicel subequal to funicle 1 which is distinctly longer than wide, subequal to 2, 3 somewhat shorter; club with

[1] Cephalad.

a terminal seta. Mandibles tridentate. Propodeum short at the meson, widening laterad, with a median carina which forks at apex and runs along the caudal margin strongly, laterad turning straight cephalad forming a lateral carina which runs directly into the minute, round spiracle at cephalic margin. Propodeum polygonally lined, the sculpture different from the usual fine longitudinal sheening peculiar to the subfamily. Scutellum and postscutellum brownish, the former so only around the margins.

From one female, forest, February 16, 1912 (A. M. Lea and A.A.G.).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2613*, Queensland Museum, Brisbane, the specimen on a tag; head on a slide.

12. NEOMPHALOIDELLA SEMIFLAVICEPS new species.

Female:—Length, 1.25 mm. Slender, the abdomen conical, longer than rest of body.

Dark metallic purple, the wings hyaline, the legs concolorous except knees, tibiæ and tarsi, which together with the propleura, head (except occiput) above antennæ (orange yellow) and the pronotum centrally on each side of meson (the latter broadly concolorous) bright lemon yellow. The yellow on pronotum is separated from the yellow of propleura rather narrowly. Antennæ dusky. Base and sides of abdomen slightly yellowish. Funicle joints subequal, each slightly longer than wide, somewhat shorter than the pedicel; club with a small terminal seta; funicle 2 narrower than the others. Mandibles with three distinct teeth which are normal. Propodeum very short, apparently without carinæ.

From one female captured in forest, August 2, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2614*, Queensland Museum, Brisbane, the female on a tag; head on a slide.

A species somewhat like *Aprostocetus montanus* and *purpureus*, more like the latter.

13. NEOMPHALOIDELLA VIRIDISCAPUS new species.

Female:—Length, 2 mm. or nearly. Long and slender, the abdomen longer than the rest of the body.

Bright golden yellow, the wings hyaline, conspicuously marked with bright metallic green as follows: A marginal stripe on abdomen broken into spots of various sizes from base to distal three fourths;[10] a long line on abdomen from apex to middle along ventro-lateral aspect; median line of abdomen (purplish) rather broadly from base to distal three fourths; two narrow cross-stripes on abdomen (excluding one around base) near base; extreme tip of abdomen; ocellar area; center of occiput; scutellum except laterad of second groove; a large peltate area with an emarginate caudal margin at little less than cephalic half of scutum and not extending laterad to margins, the latter left rather broadly yellow; cephalic apex of each parapside rather broadly and a dot just cephalad of it on pronotum; cephalic half of each axilla; propodeum except laterad of postscutellum (cephalad of spiracle); metapleurum, metaventer, caudal portion of mesopleurum and mesoventer; scape, pedicel above at proximal half, funicle joints and base of first club joint. Propodeum short at meson, wider laterad, without a lateral carina. Funicle joints stout, 1 slightly longer than wide, 3 slightly wider than long. Mandibles tridentate. Pedicel rather long, longer than any of the funicle joints. Tip of ovipositor black.

From one female captured in forest, April 18, 1914 (A. P. Dodd).

Habitat: Cloncurry, Queensland.

Type: No. *Hy 2615*, Queensland Museum, Brisbane, the specimen on a tag.

[10] On dorsal aspect of course; all descriptions refer to this aspect unless particularly mentioned otherwise.

14. NEOMPHALOIDELLA NIGRICLAVA new species.

Female:—Length, 1.05 mm.

Dark æneous green, the antennæ white, the club black; knees, tibiæ and tarsi white, the wings hyaline; second two ring-joints very short; funicle 3 a little shorter than the others which are a little shorter than the pedicel and about a fourth longer than wide; club with a small terminal spine. Mandibles tridentate. Propodeum short at the meson, with a flat median carina, lateral carinæ and a curved, convex carina between the two. Median groove of scutum complete. Scutum naked. Valves of ovipositor somewhat extruded. The usual fine tetrastichine sculpture.

From one female captured in forest, January 14, 1913 (A. P. Dodd).

Habitat: Ingham, Queensland.

Type: No. *Hy 2616*, Queensland Museum, Brisbane, the specimen on a tag; head on a slide.

15. NEOMPHALOIDELLA NOMADIS new species.

Female:—Length, 1.20 mm.

Very similar to *viridiscapus* Girault but differing in the following particulars: The head is wholly yellow except center of occiput obscurely, the body is smaller, the abdomen not nearly twice the length of the thorax only a little longer, the axillæ, scutellum and parapsides are wholly metallic green, the abdomen bears five cross-stripes (the first two narrower) from base to apex (the first not counted as at base); no median colored line on abdomen; the metapleurum is yellow only across from insertion of fore wing; only the pedicel is distinctly marked with metallic green. Otherwise about the same. Funicle joints all a little wider than long. Mesopostscutellum lemon yellow.

From two females captured in forest, April 16, 1914 (A. P. Dodd).

Habitat: Cloncurry, Queensland.

Type: No. *Hy 2617*, Queensland Museum, Brisbane, one of the specimens on a tag with type of *viridiscapus*.

16. NEOMPHALOIDELLA SALTENSIS new species.

Female:—Length, 1.50 mm.

Orange or reddish yellow, the abdomen and legs yellowish brown, also the scape and head; upper half of occiput, flagellum, tip of scape above and meson of pronotum broadly, black, the other parts marked nearly like *silvensis* except that the abdomen is margined with black along a little over proximal half only (not to the distal black as in *silvensis*), the distal end of each marginal stripe broken in one or two places so that there appear to be one or two marginal spots caudad. Postscutellum lemon yellow, propodeum black, orange laterad of the spiracle. Scutellum laterad of first grooves distinctly suffused with reddish. The abdomen is not conical as in *silvensis* yet longer than the thorax. Propodeum short at the meson, with a pair of median carinæ but no others. Central frustum-shaped black marking on scutum at cephalic half; a black spot on caudo-lateral angle of pronotum. Club with a terminal spur. Funicle 1 subequal to the club, 3 distinctly longer than the rather long pedicel, 2 intermediate between 1 and 3, the latter twice longer than wide. Median groove of scutum delicate. Teeth of mandibles not distinctly separated as regards the last two.

From one female captured in forest, March 31, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2618*, Queensland Museum, Brisbane, the specimen on a tag; head on a slide.

17. NEOMPHALOIDELLA BREVIS new species.

Female:—Length, 0.50 mm.

Dark metallic green, the wings hyaline, the legs, proximal third of abdomen, head and antennæ pale lemon yellow. Caudal coxa metallic green. Distal two funicle joints quadrate, 1 a little longer than wide, a little shorter than the pedicel. Mandibles delicate, tridentate. Pedicel above at base and distal club joint dusky. Propodeum very short, with an obscure median carina, true lateral carinæ absent, the spiracle minute, central. Club with a small nipple. Abdomen about as long as the thorax.

From one female captured by sweeping grass in forest, April 8, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 3619*, Queensland Museum, Brisbane, the female on a tag; head on a slide.

18. NEOMPHALOIDELLA GLUCKI new species.

Female:—Length, 1.15 mm.

Dark metallic purple black, the scapæ, pedicel, legs and abdomen pale lemon yellow, the abdomen margined down each side with purple from base to distal three fourths and with four cross-stripes commencing at proximal fourth, the fourth stripe across between the ends of the marginal purple; just distad of ends of marginal purple is a marginal dot. Extreme tip of abdomen purple, the base yellow. Pedicel a little dusky, rest of antenna dusky black. Funicle joints subequal, each a half longer than wide and somewhat longer than the pedicel; second two ring-joints very short. Club distinctly jointed, with a short terminal spine, the middle joint longest, slightly shorter than funicle 3, the proximal joint subequal to pedicel. Mandibles tridentate. Propodeum without true lateral carinæ, short at the meson.

From one female captured by sweeping in forest, second growth, May 22, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 3620*, Queensland Museum, Brisbane, the female on a tag; head on a slide.

Dedicated to Christopher von Gluck.

19. NEOMPHALOIDELLA SCHILLERI new species.

Female:—Length, 1 mm.

Similar to *Aprostocetus tarsalis* Girault but the abdomen is margined all around with metallic purple and there are no other markings except a cross-stripe a little before tip; also the femora are wholly concolorous and the antennæ all white except the purplish club and base of pedicel. The funicle joints are all short, subequal to the pedicel yet distinctly longer than wide. Club with a distinct nipple. Two outer teeth of mandible acute, equal. Propodeum without lateral carinæ, short at the meson.

From one female captured March 6, 1914 (A. P. Dodd). Jungle.

Habitat: Cooktown, Queensland.

Type: No. *Hy 3621*, Queensland Museum, Brisbane, the specimen on a slide with the type of *Physcus multicolor* Girault.

Dedicated to the poet Frederick Schiller.

20. NEOMPHALOIDELLA MARGINATUS (Girault).

Tetrastichus marginatus Girault.

The apex of abdomen is metallic purple including the tip of the ovipositor valves. Antennæ pale yellow. Propodeum without lateral carinæ. Scutum naked. Type re-examined.

21. NEOMPHALOIDELLA OCTOGUTTATA new species.

Female:—Length, 1.15 mm. Abdomen pointed, conic ovate. Slender.

Black with the usual sculpture, the wings hyaline, the scape, tibiæ, tarsi and most of first two pairs of femora, pale yellowish, the abdomen ventrad golden yellow except along meson, above black with a golden yellow spot at base centrally; four smaller spots (wider than long) on each side of meson (narrowly separated by a thin black median stripe but the first pair obscurely so) and a rather broad cross-stripe a short distance before tip, golden yellow; the four spots uniformly distributed between the basal spot and the distal stripe. Funicle joints slender, over twice longer than wide, subequal, longer than the pedicel. Club with a distinct terminal spine. Mandibles tridentate. Second two ring-joints very short. Propodeum very short at meson, widening laterad, noncarinate but laterad with two oblique, wedgeshaped impressions (wide-end cephalad) narrowly separated, the separating ridge having the appearance of a true lateral carina; the minute, round spiracle is in the lateral of these two impressions which do not extend quite to cephalic margin of propodeum.

From one female caught in miscellaneous sweepings, May 11, 1914 (A. P. Dodd).

Habitat: Murwillumbah, New South Wales.

Type: No. *Hy 2622*, Queensland Museum, Brisbane, the specimen on a tag; head and abdomen on a slide.

Genus TETRASTICHELLA Girault.[1]

1. TETRASTICHELLA PALLIDIVENTRIS new species.

Female:—Length, 0.75 mm. Slender. Postmarginal vein barely developed.

Black, the wings hyaline, the head, antennæ, abdomen and legs very pale yellow, the abdomen with four very faint cross-stripes of dusky, the first and last rather far from their respective ends of the region. Stigmal vein rather long, the marginal cilia of fore wing not short, distinctly somewhat longer than usual (about one sixth of greatest wing width). Propodeum with a distinct median carina, no true lateral carinæ, scaly; a loop-like carina directly from spiracle. Funicle joints with sparse, very long, fine hairs, all long, 3 twice longer than wide, a little shorter than the short club, much longer than the pedicel, somewhat shorter than 1 or 2. Club with a long, distinct terminal spine. Mandibles tridentate. Abdomen longer than the thorax. Pedicel a little longer than wide at apex. Second two ring-joints extremely short, the first large, distinct.

From one female caught in jungle, July 11, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2623*, Queensland Museum, Brisbane, the specimen on a tag; head on a slide.

2. TETRASTICHELLA FASCIATELLA Girault.

This is the correct new name proposed for *Tetrastichus fasciatus* (Girault) and not as in *antea*, p. 238.

3. TETRASTICHELLA FLAVELLA new species of Girault and A. P. Dodd.

Female:—Length, 1.50 mm.

Uniform honey yellow, the legs and antennæ concolorous; eyes and ocelli garnet. Wings hyaline. Propodeum short. Pedicel distinctly longer than funicle 1; funicle joints subequal, all a little longer than wide; second club joint longer than first, first ring-joint not very small, second and third minute.

From one female caught on foliage of Eucalyptus, forest, October 6, 1913 (A.A.G.).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2624*, Queensland Museum, Brisbane, the specimen on a tag; head on a slide.

[1] See *Syntomosphyrella*.

4. TETRASTICHELLA TRICOLOR new species.

Female:—Length, 1 mm.

Dark brown, the legs (except most of hind coxa) and scape pale yellow; lower half of face and ventral margin of occiput lemon yellow; abdomen golden yellow, bearing four cross-stripes of fuscous beginning a little distad of proximal third; the first three of these stripes are so close together and so much diffused as to form what appears to be one broad fuscous stripe across the abdomen at about middle; the fourth stripe is midway between apex and the third stripe (or distal margin of the broad stripe). Propodeum with a median carina and no others, scaly reticulate. Stigmal vein long, the postmarginal absent. Wings hyaline. Second two ring-joints extremely short, hidden between the first and funicle 1. Pedicel and funicle joints subequal, the funicle joints subquadrate or else slightly longer than wide. Mandibles tridentate.

From one female reared from miscellaneous galls on Eucalyptus, November, 1912.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2625*, Queensland Museum, Brisbane, the specimen on a slide.

Genus APROSTOCERELLA Girault.

1. APROSTOCERELLA KELLOGGI Girault.

Length, 1.35 mm. Funicle 1 slightly shorter than the pedicel, slightly longer than 2 or 3. Propodeum short, with a median carina. The type was captured by sweeping along a jungle path and consists of a female on a tag and a slide with the head. The abdomen appears to have but three cross-stripes. Type re-examined.

2. APROSTOCERELLA IO Girault.

A female, type locality, jungle, June 29. This specimen was metallic purple. Propodeum without lateral carinæ, the median carinæ complete. Scape more or less dusky. First ring-joint much the longest.

3. APROSTOCERELLA FLAVA Girault.

I have verified the median grooved line of scutum for the type female.

4. APROSTOCERELLA FULGENS new species.

Female:—Length, 1.80 mm.

Brilliant golden yellow, the broad fore wings hyaline; face of pronotum, cephalic margin of propodeum and three cross-stripes on abdomen jet black; first cross-stripe of abdomen at apex of about proximal third, narrow, widely interrupted at the meson, the second broader, complete, the third abbreviated laterad. A minute marginal dot precedes the first cross-stripe. Tip of abdomen and ovipositor concolorous. Funicle and club dusky black; scape and pedicel concolorous. The latter dusky at base above; three distal ring-joints extremely short, first long; pedicel obconic, subequal to funicle 2 which is longest, 1 shortest, barely longer than wide, 3 intermediate between 1 and 2; club with a short terminal spine which is distinct. Mandibles tridentate. Club two thirds or more the length of the funicle. Propodeum dusky and short at the meson, with a distinct median carina there which forks at apex, the lateral carina absent, the spiracle rather large, round-oval.

From one female specimen captured in forest, January 8, 1914 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2626*, Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

GENUS EPOMPHALOIDES Girault.

1. EPOMPHALOIDES FLAVUS Girault.

Female:—Length, 1.35 mm. Funicle 1 a little longer than wide. Mandibles tridentate, the inner tooth shortest. The type was captured in forest, May 3, 1913 and is on a slide.

2. EPOMPHALOIDES VIRIDIS Girault.

This is a synonym of *Epitetrastichus longfellowi* Girault.

3. EPOMPHALOIDES PULCHER new species of Girault and A. P. Dodd.

Female:—Length, 1.60 mm.

Dark metallic green, the coxæ concolorous; rest of legs bright golden yellow, the femora somewhat brown; antennal scape yellow; pedicel brownish; rest of antennæ black. Propodeum with a strong median carina. Wings hyaline. Pedicel one half shorter than first funicle joint which is elongate; second slightly shorter than first; third a little shorter than second but distinctly longer than pedicel; club one half longer than first funicle joint, first club joint the longest, a little longer than second.

From one female caught by sweeping in heart of jungle, 800 feet, September 13, 1913 (A. P. Dodd).

Habitat: Kuranda, Queensland.

Type: No. *Hy 2627*, Queensland Museum, Brisbane, the female on a tag; head on slide.

"A female at Malanda, Queensland, virgin jungle, December 31, 1911. Compared with type. Slender. Valves of ovipositor somewhat extruded, the femora more or less colored proximad inwardly, the coxæ yellowish. Antennæ slender, filiform, the ring-joints distinct. Scutum naked. Lateral carinæ on propodeum absent. Fore wings broad and somewhat sordid." (A. A. Girault.)

4. EPOMPHALOIDES PALLIDIPES new species of Girault and A. P. Dodd.

Female:—Length, 2 mm.

Dark metallic green; oral area of face yellow; antennal scape yellow, rest of antennæ black; legs wholly yellow. Propodeum scaly; median carina of propodeum forking before apex. Pedicel elongate but barely as long as funicle 3, 1 a half longer than pedicel, 2 somewhat shorter than 1, 3 shorter than 2. Mandibles tridentate.

From one female caught in forest, July 1, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2628*, Queensland Museum, Brisbane, the specimen on a tag; head on a slide.

5. EPOMPHALOIDES SEMIFLAVICEPS new species of Girault and A. P. Dodd.

Female:—Length, 2.10 mm.

Bright metallic green; legs, antennal scape, face below the antennæ, margins of the eyes and a square patch near base of abdomen dorso-mesad, golden yellow; rest of antennæ, black. Wings hyaline. Propodeum rather long. Otherwise as in *pallidipes*.

Described from one female caught by sweeping in forest, August 5, 1913 (A. A. Girault).

Habitat: Northern Queensland (Gordonvale near Cairns).

Type: No. *Hy 2629*, Queensland Museum, Brisbane, a female on a tag; the head on a slide.

6. EPOMPHALOIDES VARIEGATUM new species.

Female:—Length, 0.85 mm. Short.

Deep golden yellow, the wings hyaline; the upper part of occiput, obscure, transverse stripes across dorsum of abdomen, side and venter of the latter at base, side of thorax and hind coxæ, black; legs and scape white, the rest of antennæ pallid dusky. Mandibles black, tridentate. Pedicel much longer than any of the funicle joints, stout, obconic; first funicle joint longest, slightly longer than wide; second shortest, somewhat wider than long, narrower than the others; third subhemispherical, wider than long, longer than second and wider; second two ring-joints very short; club with a distinct terminal spine. Fore wings with the marginal fringes rather longer than usual, the venation yellow; the discal cilia short and like minute points.

Described from one female caught by sweeping in forest, December 4, 1913.

Habitat: Northern Queensland (Gordonvale near Cairns).

Type: No. *Hy 2630*, Queensland Museum, Brisbane, the above specimen on a slide.

Genus NEOTRICHAPOROIDES Girault.

This genus is confirmed.

1. NEOTRICHAPOROIDES UNIGUTTATUS Girault.

See *Tetrastichomorpha flava, antea. Female:* Length, 2.20 mm. The median carina of propodeum forks at apex. Funicle 1 over four times its own width, somewhat shorter than the club. Sculpture normal. The type was captured in forest, May 3, 1913 and is on a tag, the head on a slide. Other females have been captured in the type locality, July 7, 1912 and April 20, 1914. There are four ring-joints.

2. NEOTRICHAPOROIDES FLAVIPRONOTUM new species.

Female:—Length, 1.30 mm.

Agreeing with the description of *Trichaporoidella eleganta* Girault but the whole of the dorsal thorax except the pronotum is dark metallic green and only the base of abdomen and the lateral margin along nearly proximal half are metallic green. Ocellar area green; funicle and club black. Second ring-joint extremely short. Propodeum with a strong median carina; no true lateral carinæ; a yellow area on propodeum just laterad of spiracle. Part of vertex caudad of ocelli, distal half of scape above and dorsal pedicel metallic green.

From three females captured in forest, March 31 and April 3, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2631*, Queensland Museum, Brisbane, one of the specimens on a tag.

Caudal margin of pronotum at meson green sometimes. Lateral part of propodeum narrowly yellowish. On April 9, 1914 two females at Townsville, Queensland (A. P. Dodd).

3. NEOTRICHAPOROIDES DECORA (Girault).

Removed from *Trichaporoidella*. Second ring-joint very short. Type slide re-examined. In a second female taken in the type locality, April 13, 1913 (forest), it was seen that there is a carina just laterad of the spiracle on propodeum but true lateral carinæ are absent.

4. NEOTRICHAPOROIDES FRATER new species.

Female:—Length, 1.75 mm. Scutum naked. Funicle 3 much longer than wide.

Exactly similar to *Trichaporoidella particolor* Girault but stouter and blue (the yellow orange) and of the head only the oral area is yellow and the legs are not white but deep orange yellow except hind coxæ above at proximal half. Funicle 1 subequal to club, 3 to the

elongate pedicel. Scape yellow except at apex above. Ring-joint 2 extremely short, the other three large. Mandibles bidentate, tooth 2 broadly truncate. The yellow of abdomen at side of base is distinct but less than a sixth of its length. The spot above at base of abdomen also shorter than in the compared species.

From one female caught in forest, May 15, 1914 (A. P. Dodd).

Habitat: Chindera (Tweed River), New South Wales.

Type: No. *Hy 2633*, Queensland Museum, Brisbane, the specimen on a tag; head on a slide.

Compared with type of the *Trichaporoides*.

GENUS EPENTASTICHUS Girault.

1. EPENTASTICHUS WALLACEI new name.

Aprostocetus sexguttatus Girault, preoccupied.

Female:—Length, 0.80 mm.

Agrees with the description of *Epentastichus flavella* but only the meson of propodeum is dusky, the body is golden yellow, the abdomen bears three roundish marginal dots on a little over proximal half and is dusky across base narrowly. Also funicle 1 is shortest, quadrate, 2 and 3 somewhat longer than wide, each somewhat shorter than the pedicel which is somewhat shorter than with *flavus*. An oblique dusky stripe along cephalic margin of propodeum on each side of meson. Otherwise, like *flavus*. Club with a short terminal spine. Mandibles tridentate. Propodeum with a median carina. Wings broad. Hind wings with about five lines of discal cilia where widest.

From one female captured in forest, April 15, 1914 (A. P. Dodd), Cloncurry, Queensland.

2. EPENTASTICHUS QUADRIMACULÆ new species.

Female:—The same as *wallacei* but the abdomen bears only two of the marginal dots, the proximal two, and the body is a third larger.

From one female captured with the above (*wallacei*), April 15, 1914.

Habitat: Cloncurry, Queensland. Forest.

Type: No. *Hy 2632*, Queensland Museum, Brisbane, the specimen on a slide.

3. EPENTASTICHUS FLAVELLA new species.

See *antea* (these Memoirs, II), p. 243, *Epentastichus flavus* (Girault) which, together with *Quadrastichodes flavus* Girault, is a *nomen nudum*. Additional characters are: Length, 1.18 mm. Antennæ inserted a little above the ventral ends of the eyes. Mandibles tridentate. Marginal cilia of fore wings short. Scape long, compressed. Club terminating in a nipple. The type is a head on a slide. The type female was captured on forest downs, July 14, 1912.

GENUS SYNTOMOSPHYRELLA Girault.

1 SYNTOMOSPHYRELLA FUSCIPENNIS Girault.

One female, type locality, December 4, forest. Compared with type. The head is more or less brownish and the postmarginal vein really only a fourth the length of the stigmal. The species resembles *Selitrichodelia fuscipennis*.

This species must stand as it is though it is exceedingly similar to *Selitrichodelia fuscipennis*. Yet the latter is said to have a solid club and a groove on the scutum. Both species have a short propodeum at meson which bears a complete median carina (very short) and no others. The wings are identical but distinctly broader in the *Selitrichodelia* and the

marginal fringes shorter. The third funicle joint in the *Syntomosphyrella* is shortest, somewhat wider than long, 2 longest, somewhat longer than wide, nearly as long as the pedicel, 1 a little shorter than 2. In the *Selitrichodelia*, the median groove of scutum is not deep but delicate. In the *Syntomosphyrella* there can be no doubt in regard to at least two club joints while no trace of the third can be seen; the club is divided a little proximad of middle.

To further complicate matters I have a specimen of a species agreeing with the *Selitrichodelia* except that there are three ring-joints and two distinct club joints. This specimen differs from the *Syntomosphyrella* in having the antennæ stouter, the mandibles distinctly larger and the wings broader, besides the groove on the scutum. This specimen was captured at Tweed Heads, Tweed River, N. S. Wales, May 14, 1914, in forest (A. P. Dodd). The second ring-joint is very short. The cephalic tibiæ are all white in all three (not the femora as originally stated for the *Syntomosphyrella*).

After some consideration, I concluded the New South Wales specimen to be the *Selitrichodelia*[12] with which it agrees in every particular that could be made out. It has a short postmarginal vein. Types re-examined.

2. SYNTOMOSPHYRELLA QUADRIMACULATA Girault.

Equals *Selitrichodelia trimaculosa* Girault. Types compared.

3. SYNTOMOSPHYRELLA ATRIVENTRIS new species.

Female:—Length, 1 mm. Short, robust.

Black, the wings hyaline; the pronotum, scutum (except for a large subquadrate blackish area at base extending nearly to lateral margins) and the head orange yellow; also abdomen slightly around base. Scutellum, legs except hind coxa (other coxæ blackish at base) and hind femur (washed with blackish), antennæ and lateral margins of scutum (more broadly cephalad), contrasting lemon yellow. Scutum long; propodeum very short. Mandibles tridentate. Pedicel distinctly longer than any of the funicle joints, the latter subquadrate, subequal. Club without a distinct terminal seta. Antennæ washed with dusky. Stigmal vein long, the postmarginal distinctly but only slightly developed. Fore wings broad.

From one female captured by sweeping jungle, along a forest streamlet, June 14, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2634*, Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

4. SYNTOMOSPHYRELLA ACOMATA new species of Girault and A. P. Dodd.

Female:—Length, 1.10 mm.

Golden yellow, the wings hyaline, the appendages concolorous; a spot on each side of face of pronotum, the cephalo-lateral angle of each axilla, meson and caudal margin at meson of propodeum (jet) and two spots on abdomen somewhat distad of middle, one on each side of meson, blackish. Middle of cephalic margin on each side of propodeum, dusky. Funicle joints subequal, each somewhat wider than long and about half the length of the pedicel. Mandibles tridentate. Propodeum short at the meson. Abdomen short and stout.

Described from two females reared from miscellaneous galls on Eucalyptus, October 6, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2635*, Queensland Museum, Brisbane, one of the above specimens on a tag, the head on a slide.

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[12] *Selitrichodelia fuscipennis* must therefore be referred to *Tetrastichella* where the name is preoccupied. The new name *nubilipennis* is herewith given to it.

GENUS SELITRICHODELIA Girault.[13]

1. SELITRICHODELIA AURIOS Girault.

The type locality is Brisbane, Queensland.

2. SELITRICHODELIA TRIMACULOSA Girault.

A synonym of *Syntomosphyrella quadrimaculata* Girault.

3. SELITRICHODELIA QUADRIMACULATA Girault.

Antea, p. 247, line 2 of the description, *trimaculata* read *trimaculosa*.

4. SELITRICHODELIA CULEX new species.

Female:—Length, 1 mm.

Differing from the genotype in having a glazed sculpture or nearly glazed. Black, the wings hyaline, the head, antennæ and legs except coxæ, lemon yellow; also dorsum of abdomen at meson near apex, more or less so. Mandibles tridentate. Postscutellum somewhat yellowish, nearly reaching the abdomen, the propodeum very short at the meson, the median carina extremely short, no true lateral carinæ but a short carina leading directly from the spiracle, curved to caudal margin then reascending cephalo-laterad. Funicle joints all distinctly shorter than the pedicel, 2 a little the largest, all somewhat wider than long. Club without a terminal spine, ovate, somewhat longer than the funicle.

From one female captured in forest, December 24, 1911.

Habitat: Double Island (mainland) near Cairns, Queensland.

Type: No. *Hy 2637*, Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

5. SELITRICHODELIA MESMERI new species.

Female:—Length, 1 mm. Abdomen conic ovate, longer than the thorax.

Agrees with the description of *trimaculosa* but there is no dusky spot on the scutellum and the spot at apex of each axilla is a little smaller. There is a minute black dot at the extreme latero-caudal apex of the pronotum in both species. Mandibles tridentate. Propodeum very short.

From one female captured in forest, April 16, 1914 (A. P. Dodd).

Habitat: Cloncurry, Queensland.

Type: No. *Hy 2638*, Queensland Museum, Brisbane, the specimen on a slide.

Compared with types of *trimaculosa*. The propodeum is not dusky in *mesmeri*.

Dedicated to Franz Anton Mesmer.

6. SELITRICHODELIA TRANSVERSIFASCIATUS new species.

Female:—Length, 1.45 mm.

Like *Tetrastichus* Haliday but the club is solid and the scape convexly compressed beneath as in many encyrtine genera but not really foliaceously dilated but rather broadly compressed; two distinct, rather large ring-joints. Abdomen conic-ovate. Wings normal. Mandibles tridentate. Propodeum hidden at the meson by the postscutellum, without lateral carinæ. Median sulcus of scutum faint.

Honey yellow, the wings hyaline, the venation dusky, the body marked with black as follows: A crescent across the upper occiput but interrupted at the meson, a dusky marking in front of lateral ocellus, one below insertion of antenna, a longish marking just meso-ventrad

[13] See *Syntomosphyrella*.

of ventral end of eye, face of pronotum; a little longer than wide rectangular spot, obliqued, center of each side of scutum; a little longer, nearly quadrate spot at base of scutellum at meson (the three forming somewhat the appearance of a death's head), a minute dot on pronotum latero-caudal angle, apex of the axillæ (the latter entirely cephalad of scutellum) and six narrow but distinct cross-stripes on abdomen, the first at base, the fifth distinctly interrupted at the meson, the sixth a little curved, abbreviated laterad a little and some little distance from apex. Funicle joints subequal, a little wider than long, shorter than the pedicel; club rather large, short ovate. Disk of scutum orange yellow.

From one female caught by sweeping forest uplands, May 29, 1914 (A. P. Dodd).

Habitat: Maclean, Clarence River, New South Wales.

Type: No. *Hy 2636*, Queensland Museum, Brisbane, the specimen on a tag; head on a slide with slide type of *Neomphaloidella octoguttata* Girault.

Genus ASYNTOMOSPHYRUM Girault.

1. ASYNTOMOSPHYRUM PAX Girault.

Female:—Length, 0.75 mm. The type was captured in forest, 1,500 feet, May 30, 1913 and is on a slide.

2. ASYNTOMOSPHYRUM ACUTIVENTRIS Girault belongs to *Tetrastichus*.

3. ASYNTOMOSPHYRUM UNFASCIATIVENTRIS new species.

Female:—Length, 0.80 mm.

Bright golden or orange yellow, the abdomen and legs lemon yellow, the propodeum dusky and a rather narrow cross-stripe of black on abdomen a little beyond middle; wings hyaline. Tip of valves of ovipositor black. Sculpture very fine and usual for the group. Propodeum scaly and with a median carina and an irregular pair of lateral ones, the mesal one forked. Mandibles tridentate. Hind wings attenuate, narrow. Marginal fringes of fore wing somewhat longer than usual. Funicle joints 2 and 3 subequal, each somewhat longer than 1, subequal to pedicel and club 2, the latter longest of the club; terminal spine prominent. Funicle 1 somewhat longer than wide. Antennæ slender, dusky black, the scape and pedicel white beneath. Spiracle cephalad and between the pair of lateral carinæ. Fore wings moderately slender.

From one female captured in forest, January 5, 1914 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2639*, Queensland Museum, Brisbane, the specimen on a slide.

4. ASYNTOMOSPHYRUM MINUTISSIMUM new species.

Female:—Length, 0.50 mm.

Similar to the preceding but smaller and the abdominal stripe is interrupted at the meson rather broadly. Also, the antennæ are shorter, the club lacks the distinct terminal spine and the funicle joints are all wider than long (instead of all longer than wide); moreover, funicle 1 is longest, 3 shortest, 2 intermediate, the pedicel longer than either; club longer than the funicle. Also, the antennæ are not black but yellow like the rest of the body. Mandibles smaller.

From one female captured by sweeping forest, January 4, 1913.

Habitat: Capeville (Pentland), Queensland.

Type: No. *Hy 2640*, Queensland Museum, Brisbane, the specimen on a slide.

PARAPROSTOCETUS new genus.

Like *Trichaporoidella* Girault but the scutum bears a median sulcus.

1. PARAPROSTOCETUS PURPUREITHORAX new species. Genotype.

Female:—Length, 1 mm.

Dark metallic purple, the wings hyaline, the antennæ, legs and abdomen rich golden yellow, the abdomen with two purple cross-stripes just before tip, the second a little broader and more distinct, the extreme tip purple and the lateral margin along the short distance between tip and the second or distal cross-stripe. Tip of valves of ovipositor purple. Abdomen conic-ovate, somewhat longer than the thorax. Funicle joints subequal, each a little longer than wide, the pedicel about equal to either of them; second two ring-joints very short. Club with a minute nipple at apex. Scapo rather short. Mandibles tridentate but the third tooth minute. Stigmal vein short. Sculpture normal. Propodeum very finely scaly, very short at the meson, without lateral carinæ, the spiracle cephalad and in a short longitudinal depression or half channel, the median carina present, very short. Thorax with scattered, inconspicuous setæ which are not numerous.

From one female captured by sweeping bushes on October 10, 1913 (G. F. Hill).

Habitat: Port Darwin, Northern Territory.

Type: No. *Hy 2641*, Queensland Museum, Brisbane, the specimen on a tag.

2. PARAPROSTOCETUS SANNIO (Girault).

From *Quadrastichus*. Propodeum with a median carina, no others; funicle joints as in *Ootetrastichus beatus* Perkins. Femora purple along dorsal edge. Marginal stripe of abdomen broad. Second two ring-joints very short, usually concealed. Base of abdomen nearly free from purple. Type re-examined. A second female, type habitat, February 19, 1914.[14]

DUOTRASTICHUS new genus of A. P. Dodd.

Female:—Similar to *Tetrastichus* Haliday but the antennæ 9-jointed, with four ring-joints, two funicle and a solid club.

1. DUOTRASTICHUS MONTICOLA new species of A. P. Dodd. Genotype.

Female:—Length, 1.75 mm.

Head, legs (except dusky hind coxæ) and basal third of abdomen golden yellow. Thorax very dark æneous green, the scutellum chocolate brown, the postscutellum lemon yellow; apical two thirds of abdomen dark brown, more or less obscurely, transversely striped with black; ocelli in a dark area. Antennæ yellow-brown. With the usual fine tetrastichine sculpture. Median groove of scutum complete. Scutum with a row of shallow punctate depressions just within the parapsidal furrows. Abdomen conic-ovate, no longer than rest of body, almost straight above, gently convex beneath. Propodeum rather short, scaly, with a median carina. Wings hyaline, marginal vein as long as submarginal, stigmal moderately long. Pedicel rather long but slightly shorter than either of the funicle joints, of which 2 is somewhat the largest; club wider but no longer than preceding joint, with a short terminal nipple. Eyes garnet. Mandibles tridentate.

From one female captured by sweeping in forest, summit of Mount Pyramid, 3,000 feet, August 17, 1912 (A.A.G.).

Habitat: Mount Pyramid (Cairns), Queensland.

Type: No. *Hy 2642*, Queensland Museum, Brisbane, the specimen on a tag; head on a slide.

[14] A third, July 10. In this specimen the mesal two of the usual four grooves on the scutellum were practically absent, indicated at apex only. The coxæ are purple.

GENUS ELACHERTETRASTICHUS Girault.

Removed from the Elachertini where it had been misplaced. Now a synonym of *Rhicnopeltella* in the Omphalini.

GENUS EULOPHOSCOTOLINX Girault.

Removed from the Elachertini.

GENUS CIRROSPILOMYIA Girault.

Removed from the Elachertini. The club is 3-jointed.

GENUS WINNEMANA Crawford.

1. WINNEMANA PURPUREA (Girault).

Cirrospiloidelleus purpureus Girault.

Differs from the genotype in that the postmarginal vein is as long as the stigmal. Differs from *Cirrospilomyia magniventris* Girault in being purple, the legs are paler, the propodeal spiracle farther mesad in a longitudinal wide depression while the scutellum has weak longitudinal grooves. Type re-examined.

This species has been reared from Cecidomyiid galls on *Melaleuca*, type locality, January, 1913 (A. P. Dodd). The club lacks the terminal spine.

PSEUDOMPHALOIDES new genus.

Differs from *Neomphaloidella* Girault in that the funicle is 4-jointed, the club 2-jointed.

1. PSEUDOMPHALOIDES ÆNELLA new species. Genotype.

Female:—Length, 2.25 mm.

Dark metallic blue; coxæ concolorous, rest of legs bright golden yellow; scape suffused with yellow, rest of antennæ black. Wings hyaline. Median groove of mesoscutum incomplete, failing anteriorly. Mesoscutum and scutellum without bristles. Propodeum short, with fine polygonal scaly sculpture, median carina distinct, lateral carinæ absent. Funicle 1 long, distinctly longer than pedicel; 2 and 3 subequal, each a little shorter than 1, much longer than pedicel; club long, much longer than funicle 1; first ring-joint rather large, other two very small.

From one female captured sweeping in heart of jungle, 800 feet, September 13, 1913 (A. P. Dodd).

Habitat: Kuranda, Queensland.

Type: No. *Hy 2643*, Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

EPIQUADRASTICHUS new genus.

Female:—Similar to *Quadrastichodes* Girault but the scutum with a median sulcus, the club solid, the scape normal, also the venation. Ring-joints subequal, large.

1. EPIQUADRASTICHUS EMERSONI new species.[15]

Female:—Length, 2.50 mm. Long, the abdomen conic-ovate, longer than the rest of the body.

Very dark metallic green, the abdomen coppery black, the wings hyaline; legs and scape (except the latter dorsad and the caudal two pairs of coxæ) pale yellowish brown. Oral area

[15] Dedicated to Ralph Waldo Emerson.

rather broadly golden yellow and a golden yellow triangle at meson of cephalic vertex. Pedicel elongate, subequal to funicle 4 which is somewhat over half the length of 1, the latter elongate, distinctly longer than the club, over thrice longer than wide; funicle and club clothed with moderately long hairs. Club slightly nipplcd. Mandibles tridentate. Marginal vein distinctly longer than the submarginal. Sculpture somewhat rougher than usual but normal for the tribe, the propodeum slightly smoother, glabrous narrowly along the median line, noncarinate. Pronotum (viewed from above when the head has been removed) large, three fourths the length of the scutum. Abdomen sculptured like the propodeum. Scutum nearly naked; pronotum with scattered bristles from obscure punctures.

From one female caught by sweeping in forest, June 10, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2644*, Queensland Museum, Brisbane, the specimen on a tag; head on a slide.

In the Diagnosis of Genera, *antea*, p. 249, line 6 of the whole, an asterisk should follow the word *lines*. Page 250, under *Melittobia*, the sentences as follows should be added: Frons directed dorsad, head longer than wide, body flattened. The genus bears three ring-joints. Page 251, line 1 under II, omit the numeral *3*. In the table, characters based on the propodeum have no significance.

Tribe CERATONEURINI.

Antea, p. 251, second footnote, insert the word *also* before *by*.

Genus CERATONEURONELLA Girault.

For correction of the generic description, *see* the first species herewith described.

1. CERATONEURONELLA RUFOBASALIS new species.

Female:—Length, 2.05 mm.

Agrees with the description of *nigriventris* Girault in all details but differs as follows: The base of the abdomen is reddish yellow (a little less than proximal third all round); the petiole is white; the first funicle joint is subequal to the pedicel which is longer than in the other species and the stained area on the fore wing is much less distinct, only an obscure stain under about the middle of the marginal vein (a little distad of the middle). In the genotype this spot is largo and distinct, ovate and projects conically distad of the venation. Tip of abdomen whitish. Hind coxa and femur with the elongate black spot. Abdomen finely scaly. Segment 3 of abdomen shorter than 1, intermediate between it and segment 4. Mandibles tridentate. Median groove of scutum absent. Median groove of scutellum indicated by an incision at base only. Funicle 3 shorter than 1, barely longer than wide.

From two females labelled "No. 26. 10-10-13. G. F. Hill."

Habitat: Port Darwin, Northern Territory.

Types: No. *Hy 2645*, Queensland Museum, Brisbane, two females on a tag.

In this genus the stigmal vein is shorter than usual, the marginal vein slender, the hind tibial spur longer and stout (but not greatly lengthened), the club solid, the scutum simple, the median groove of scutellum faint, the first lateral groove further laterad than usual, as seen from above along lateral margin of scutellum and resembling the grooved scutellum of the Elachertiui; the first grooves are absent. Hind legs, wing and antenna of genotype re-examined. In the genotype, funicle 1 is only a little longer than the pedicel and no longer than the other two funicle joints.

2. CERATONEURONELLA ALIGHERINI new species.

Female:—Length, 2 mm.

Similar to *rufobasalis* except that the thorax is uniform in color and the abdomen wholly black except the white extreme tip and petiole. The black stripe down mesal side of caudal femur is longer than in *nigriventris* extending from the knee distinctly more than half way to base (not more than half way in the genotype). The light infuscation of the fore wing has straight margins (bulged proximad and distad in the genotype and much more distinct). The discal ciliation of the fore wing in all species is not dense but moderately scattered, the cilia numerous. Abdomen distad of segment 3 densely reticulated (much the same in *rufobasalis*), proximad glabrous. Propodeum very densely scaly; lateral carina present (also in *rufobasalis*) and the lateral margin carinated (or a carina at the lateral margin).

From one female captured by sweeping jungle along the Mulgrave River, April 12, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2646*, Queensland Museum, Brisbane, the female on a tag; head, fore wing and hind legs on a slide.

Dedicated to Dante Alighere.

PARACERATONEURA new genus.

Like *Ceratoneuronella* but the antennæ bear *four* ring-joints. The abdominal petiole is as long as the hind coxæ.

1. PARACERATONEURA GOETHEI new species. Genotype.

Female:—Length, 1.85 mm.

Similar to *Ceratoneuronella nigriventris* Girault but the wings are hyaline, the thorax uniform in color, the hind femur without an elongate black spot nor the coxa. Club and distal two funicle joints black, the rest of antennæ dusky except the red scape. First two teeth of mandibles strong, acute, the third much shorter, broadly truncate. Funicle 3 distinctly shorter than 1, only somewhat longer than wide, 1 twice longer than wide; pedicel subequal to funicle 2. Second ring-joint shortest. Abdomen scaly after segment 3. Propodeum with a long median carina. Club without a terminal spine.

From one female caught by sweeping forest, May 27, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2647*, Queensland Museum, Brisbane, the specimen on a tag; head and hind leg on a slide.

GENUS CERATONEURONOMYIA Girault.

The genus bears *four* ring-joints. Types re-examined.

1. CERATONEURONOMYIA ARNOLDI Girault.

The type locality is Goondi (Innisfail), Queensland.

2. CERATONEURONOMYIA RUSKINI new species.

Female:—Length, 1.25 mm.

Like the original description of the genotype but the first ring-joint is large, the other three transverse-linear. Abdomen glabrous, finely scaly distad. Dark metallic green, the scutum and scutellum rosaceous coppery, the wings hyaline, the legs yellowish brown, the tibiæ and tarsi whitish. Scape and distal two club joints whitish. Antennæ as in *Ceratoneuronomyia longiscapus* Girault (actual comparison) but the pedicel is paler. Hind lateral angle of propodeum acute. Like *longiscapus* but differing as follows: The coxæ are wholly yellowish brown, the rosaceous tints are present, the hind lateral angle of propodeum

is very sharp (obtuse in the other species), the sculpture is somewhat coarser and there are a few isolated setæ along lateral margin of scutum, the median carina of propodeum paired, diverging gradually to apex (in the other species, forks a little proximad of the middle); there is a sharp lateral carina from the spiracle which forms at apex the acute lateral apex of the propodeal neck (lateral apex of propodeal neck acute in *longiscapus* and the carina is present); but there are in this species two parallel cariuæ, rather wide apart, from cephalic margin about a third or more of the way from meson to spiracle and running toward the lateral carina (absent in *longiscapus*, only one carina runs from the lateral carina cephalo-mesad to the median carina near middle).

From three females captured in jungle, February 5, 1914 (A. P. Dodd).

Habitat: Babinda, North Queensland.

Types: No. *Hy 2648*, Queensland Museum, Brisbane, two females on a tag, two heads on a slide.

GENUS CERATONEUROPSIS Girault.

1. CERATONEUROPSIS AFFINIS new species of Girault and A. P. Dodd.

Female:—Length, 1.30 mm.

Agreeing with the description of the genotype, *poincarei* Girault, but all the posterior legs are golden yellow and the first two pairs of femora are brownish; abdominal petiole yellow ventrad; pedicel golden yellow, like the scape; fifth abdominal segment occupying less than one half of the surface; abdomen wholly finely reticulated; funicle joints subequal, rather more slender than in *poincarei*; the pedicel distinctly more so and quite as long as first funicle joint; and the propodeum is tricarinate, the carinæ distinct, the small spiracle just within (mesad of) the lateral carina.

Described from one female caught by sweeping within and along edges of jungle, May 25, 1913 (A. A. Girault).

Habitat: Northern Queensland (Gordonvale near Cairns).

Type: No. *Hy 2649*, Queensland Museum, Brisbane, the above specimen on a tag, the head on a slide.

GENUS CERATOTRASTICHUS Girault and Dodd.

The scutum *has* a median sulcus.

1. CERATOTRASTICHUS BISULCATUS Girault and Dodd. Genotype.

Female:—Antennæ 11-jointed, three ring, funicle and club joints; scutellum with only two grooves, the mesal ones absent; scutum *with* a median groove, with numerous small setigerous punctures. Propodeum with a delicate median carina, reticulated. Petiole short, the second segment of abdomen occupying about a fourth of the surface, not very much longer than the others. Mandibles tridentate, the teeth large as in the Pteromalini. Hind tibial spur normal. Length 1.05 mm.

Dark metallic green, the wings hyaline, the legs, scape and pedicel yellow brown. Body with the usual fine sculpture excepting the scutum as noted. Distal club joint terminating in a distinct spur; funicle 1 a little wider than long, the other two still wider; pedicel a little longer than funicle 1; funicle and club black. Antennæ short. Lateral carinæ absent on propodeum.

Described from one female captured by sweeping in the jungle, November 15, 1913 (A. P. Dodd). Type re-examined.

Habitat: Harvey's Creek (Cairns), Queensland.

Type: No. *Hy 2650*, Queensland Museum, Brisbane, the female on a tag; head and a hind tibia on a slide.

PROCERATONEURA new genus.

Type: *Ootetrastichus lustris* Girault.

Petiole wider than long yet rather distinct. Club joints subequal. Propodeum without a median carina except a weakly indicated one; other carinæ absent. The pedicel is short, distinctly shorter than funicle 3 in spite of the statement in my table of species of *Ootetrastichus* where the contrary is stated. The original description of the species is correct. Type re-examined.

A second female has been examined captured by sweeping in forest, August 5, 1913 (A.A.G.), Gordonvale and a third same place, April 12, 1914. The first funicle joint is stouter and a little longer than the other two, distinctly not twice longer than wide. The third tooth of the mandible is truncate. Like *Ootetrastichus* otherwise but the three distal ring-joints are transverse-linear, the first large and the club is short and equally divided, subequal to funicle 1.

EUPLECTROTETRASTICHUS new genus.

Female:—Head (cephalic aspect) triangular, the antennæ inserted in the middle of the face, 11-jointed, with three ring-joints, the club 3-jointed. Hind tibial spurs single, enormously elongated as in *Euplectrus*, over half the length of hind tarsus. Venation normal. Scutum with a median groove, the scutellum with four, each of the inner two near the meson. Pronotum as in the Eurytomidæ. Propodeum with a V-shaped median carina and a curved lateral one. Abdomen with a short, stout petiole, cylindrical, the segments unequal. Mandibles tridentate.

Male:—Not known.

Type: The following species.

1. EUPLECTROTETRASTICHUS SPENCERI new species.

Female:—Length, 1.50 mm.

Rich orange yellow, immaculate, the wings hyaline; tip of ovipositor black, also the funicle and club; pedicel subequal to funicle 1 which is subequal to 2, 3 somewhat shorter, plainly longer than wide. Club with a short nipple. Scutum with greyish pubescence.

Described from one female captured along edges of jungle, November 1, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2651*, Queensland Museum, Brisbane, the above specimen on a tag, the head and a hind leg on a slide.

Dedicated to Herbert Spencer.

ACERATONEURA new genus of Girault and A. P. Dodd.

Female:—Antennæ 11-jointed, three ring-joints, four funicle joints, two club joints; second club joint with a terminal spur. Mandibles tridentate. Hind tibiæ with one apical spur, the spur not long. Mesonotum with a median groove. Scutellum with four grooves. Propodeum densely punctate, with a distinct median carina. Abdomen convex above, straight below; petiole short and stout; all segments nearly subequal, the fourth the longest.

Male:—Not known.

Type: The following species.

1. ACERATONEURA SPLENDIDA new species of A. P. Dodd and A. A. Girault.

Female:—Length, 2 mm.

Bright brownish yellow; proximal half of all coxæ and antennal scape, pedicel and ring-joints concolorous, rest of legs pale straw yellow, almost white; vertex and upper half of face, a patch in center of abdomen near apex and antennal flagellum black; eyes garnet. Wings hyaline. Abdomen densely finely punctate. Pedicel short; first funicle joint long, over four-

times as long as wide, three times as long as the pedicel; 2-4 shortening, 4 two thirds as long as 1; club scarcely longer than last funicle joint; first club joint the longer.

Described from one female taken sweeping in jungle, November 1, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2652*, Queensland Museum, Brisbane, a female on a tag, the head on a slide.

SUBFAMILY ELACHERTINÆ.

TRIBE ELACHERTINI.

Ascotolinx to the Hemiptarsenini; *Secodella* to the Omphalini; *Eulophoscotolinx*, *Cirrospilomyia* and *Elachertetrastichus* to the Tetrastichini.

GENUS ZAGRAMMOSOMA Ashmead.

1. ZAGRAMMOSOMA PULCHRA Girault.

Female:—Length, 1 mm. The wavy line down face is midway between base of antenna and ventral end of eye and extends to ventral end of head, avoiding the clypeus. *Antea*, line 9 of the description, insert *club* after *third*. The two marginal markings following the subcrescentic transverse stripe are deeply cleft centrally from caudad, the first the more so. The type female is on a slide and was captured April 9, 1913. A second female was captured in the same place just a year later.

The ring-joint is present. Coxæ metallic. Pedicel much smaller than funicle 1.

CIRROSPILOIDELLEUS new genus.

For diagnosis, see *antea*, p. 254.

1. CIRROSPILOIDELLEUS BICOLOR new species.

Female:—Length, 1.35 mm. Funicle 2 subquadrate; club joints wider than long. Funicle 1 a half longer than wide. The female type is on a tag, the hind legs and head on a slide. It was taken May 14, 1913 by sweeping jungle trees along a forest streamlet.

The proximal two thirds or nearly of the abdomen is lemon or brownish yellow. General color black. A thin median carina and a cross-carina at middle, shows on the propodeum. Segment 2 of abdomen is nearly a fourth the surface. Terminal spine of club over half the length of that region. Nonmetallic. Type re-examined.

A female at Cairns, November 1, 1911, sweeping foliage of *Melaleuca*.

2. CIRROSPILOIDELLEUS PURPUREUS Girault.

A species of *Winnemana* Crawford of the Tetrastichini.

3. CIRROSPILOIDELLEUS FASCIATIVENTRIS Girault.

Synonym: *Cirrospilomella fasciatus* Girault which see.

CIRROSPILOPSIS new genus.[16]

Differs from *Cirrospiloidelleus* in having the terminal spine of the club normal, not elongate and stout.

[16] The species are very similar to species of *Pseudiglyphomyia*.

1. CIRROSPILOPSIS NIGRIVARIEGATUS new species. Genotype.

Female:—Length, 1.05 mm.

Deep orange yellow, the wings hyaline; proximal third of abdomen dorsad yellow-brown except the margins, meson of venter of abdomen rather broadly same color, the abdomen, metapleurum and most of mesopleurum, propodeum, petiole, parapsidal furrows, cephalic margin of scutum, neck of pronotum, occiput centrally and sutures between scutum and scutellum, jet black. Face, pronotum and postscutellum lemon yellow. Legs and antennæ yellowish brown, the flagellum distinctly suffused with blackish. Club with a small terminal spine; funicle joints subequal, a little longer than wide, stout; pedicel a little shorter than either funicle joint. Mandibles 5-dontate. Postmarginal vein a little shorter than the stigmal. Thorax coarsely scaly reticulate. Propodeum and petiole foveate-rugulose, the former nevertheless with a distinct median carina.

From one female captured by sweeping jungle along the Mulgrave River, April, 12, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2653,* Queensland Museum, Brisbane, the female on a tag; head and hind tibiæ on a slide.

2. CIRROSPILOPSIS FUSCA (Girault).

Removed from *Pseudiglyphomyia.* Type re-examined. *See* remarks under *quinquefasciatus.*

3. CIRROSPILOPSIS QUINQUEFASCIATUS new species.

Female:—Length, 1.38 mm.

Dull honey yellow, the wings hyaline, the caudal margin of pronotum and the postscutellum lemon yellow; five cross-stripes on abdomen equally distant from base and apex; cephalic margin of scutum and propodeum, median carina and neck of latter and a small area just mesad of tegula, black. Center of occiput black and tip of ovipositor valves. Propodeum with a distinct median carina, otherwise delicately rugulose. Funicle joints subequal, oval, a little longer than the pedicel. Club as long as the funicle, with a short terminal spine. Mandibles 5-dentate. Thorax on each side of postscutellum lemon yellow. Postmarginal vein somewhat shorter than the stigmal.

From one female captured on sand ridges, forest near coast, May 9, 1914 (A. P. Dodd).

Habitat: Chindera (Tweed River), New South Wales.

Type: No. *Hy 2654*, Queensland Museum, Brisbane, the specimen on a tag; head and a caudal tibia on a slide.

Differs from *fusca* in having *distinct* stripes on the abdomen and otherwise; *fusca* is uniformly colored all over and the propodeum is honeycombed, the median carina obscure.

GENUS PSEUDIGLYPHELLA Girault.

In the description of the genotype, *antea*, p. 255, line 9, *postmarginal* should read *submarginal.* The parapsidal furrows are complete and deep and reach the scutellum mesad of the axillæ which are not much advanced. In the genotype, there are some golden yellow markings on the head, notably a stripe across cephalic vertex, dorsal margin of eye narrowly; two subquadrate metallic areas are blocked off on each side of dorsal face by the stripe across the vertex; also on the dorsal face a narrow yellow stripe across from eye to eye and a rather short, broad mesal stripe joining this with the cross-stripe of vertex. Inner teeth of mandible minute. Marginal vein not twice the length of the rather long stigmal.

Additional females in the type locality, forest, January, April and November. *Antea,* table of genera, p. 271, line 27, *bicarinate* read *noncarinate; an* read *a very; paired* omitted.

1. PSEUDIGLYPHELLA PETIOLATA new species.

Female:—Length, 1.20 mm.

Differs from the genotype in being partly nonmetallic and in bearing a petiole. Also, the tarsal joints are short. Black-purple, the wings hyaline, the legs, head, abdomen and antennæ honey yellow, the abdomen margined with fuscous from base to middle. Thorax coarsely scaly. Abdomen with a distinct yellow petiole. Propodeum with a distinct median carina and other interlacing carinæ, conical, brown along the meson. Postscutellum brown. Propodeum subrugulose, with a distinct lateral carina, the spiracle minute. Grooves of scutellum not joining around apex. Parapsidal furrows running off laterad before reaching pronotum, distinct. Axillæ not advanced. Venation pale, the stigmal vein about a third the length of the marginal. Center of occiput and flagellum dusky. Pedicel and two funicle joints subequal, the two latter each distinctly somewhat longer than wide. Club as long as the funicle, distinctly 3-jointed and terminating in a short spine. Mandibles 5-dentate.

From one female captured in jungle, July 13, 1913.

Habitat: Harvey's Creek (Cairns), Queensland.

Type: No. *Hy 2655*, Queensland Museum, Brisbane, the female on a tag; head and caudal tibiæ on a slide.

GENUS ATOPOSOMA Masi.

1. ATOPOSOMA SAINTPIERREI Girault.

Antea, p. 257, line 4 of the description, *mesical* read *mesial*; line 10, *scutum* read *scutellum; lags, legs.*

2. ATOPOSOMA GROTIUSI Girault.

The conical marking on the scutum extends narrowly to the scutellum. The second femur is dusky ventrad, the second tibia with a dusky band just below knee. There are six stripes on abdomen counting the one at immediate base and the colored median line of abdomen extends from the second cross-stripe to apex and is distinct. There is no spot on the postscutellum or else it is faint. There are two metallic stripes across the face above antennæ, a short dash across meson just ventrad of antennæ and laterad of each end of this, an irregular spot. Type re-examined. A second female from forest, type locality, April 20, 1914.

3. ATOPOSOMA MAZZININI Girault.

The parapsidal furrows and whole of median line of scutum and scutellum are colored, on the latter the narrow median stripe bulging centrally, thickening somewhat at center on scutum. Abdomen with seven cross-stripes (counting one at extreme base and one at apex), the median longitudinal stripe distad originating at stripe 4 and giving off a lateral curved branch which runs caudad to stripe 5, forming a W-shaped marking.[17] Propodeum wholly metallic. Type re-examined.

One female, Magnetic Island (Townsville), Queensland, January 19, 1913.

GENUS PSEUDELACHERTEUS Girault.

1. PSEUDELACHERTEUS AURIPES Girault.

Three females (Queensland Museum Collections), type locality, on flowers of *Bæckea*, April 22, 1913 (H. Hacker). The second ring-joint is large, the first very short and narrow. The ring-joints are present.

[17] Inverted.

2. PSEUDELACHERTEUS NIVEICORNIS new species.

Female:—Length, 1.05 mm.

Differing from the three species so far known in having the antennæ wholly yellowish white like the legs while the body is otherwise as in *silvensis* except that the abdomen is lemon yellow in ground color. Margining black of the abdomen broad. Scutellum finely sheened. Funicle joints globular to subglobular, subequal to the pedicel. Petiole of abdomen distinct. Mandibles 5-dentate.

From one female caught by sweeping in forest, March 2, 1914 (A. P. Dodd).

Habitat: Cooktown, Queensland.

Type: No. *Hy 2656*, Queensland Museum, Brisbane, female on a tag, head and hind legs on a slide.

3. PSEUDELACHERTEUS INVENTRIX new species.

Female:—Length, 1.50 mm.

Very similar to *silvensis* but segment 2 of abdomen is black and there are 2-3 dusky cross-stripes on distal third of abdomen. Pedicel subequal to funicle 1. In the single specimen, one caudal tibia appeared to bear two spurs but I could find only one in the other species upon re-examining the types.

From one female captured in forest, June 10, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2657*, Queensland Museum, Brisbane, the specimen on a tag; hind legs and head on a slide.

Genus ENTEDONOMORPHA Girault.[18]

1. ENTEDONOMORPHA TENNYSONI and ENTEDONOMORPHA RENANI Girault.

These two species are very much alike. The genotype is metallic like *renani*. The two type bodies have been carefully re-examined and remounted together on a slide. The species differ as follows:

renani.	*tennysoni.*
Petiole stout.	Petiole narrower.
Scutum purple.	Scutellum purple.
Abdomen broad, brown-yellow discally except venter which is black along proximal two thirds.	Abdomen slender, light yellowish discally above and below.
Caudal margin of pronotum smooth.	Pronotum uniformly sculptured.
Scutum subconvex.	Scutum flat.
Parapsidal furrows not quite attaining the latero-caudal angle of pronotum but ending laterad.	Parapsidal furrows just attaining the latero-caudal angle of pronotum.
Abdomen with a subfuscous stripe across center.	

A female of *renani* was captured March 30, 1913, type locality. The reticulation of the scutum is coarser than that of the scutellum, its cephalic margin glabrous. Pronotum transverse-quadrate.

[18] This genus upsets the present tribal arrangements, the spurs of the caudal tibiæ varying from one to two. The unique structure makes belief in parallelism most difficult. We are certainly ignorant!

2. ENTEDONOMORPHA SUBFUSCIVENTRIS new species.

Female:—Length, 1.60 mm. Compared with types of *tennysoni* and *renani*.

Differing from *tennysoni* Girault in being stouter, in having the abdomen but obscurely yellowish centrally (dorsal aspect), in having the first two femora fuscous and submetallic and in being nearly black, not evidently metallic green. Also, the scutum is distinctly longer than wide (cephalic end), the parapsidal furrows cephalad curving off before attaining the pronotum (in *tennysoni*, the scutum is wider than long cephalad, the gouge-like parapsidal furrows attaining the pronotum at the latter's extreme latero-caudal angle). The hind wings are about twice broader (about ten lines of discal cilia). Abdomen with some yellowish just before apex ventro-laterad. Grooves of scutellum curving toward each other slightly, at apex (somewhat closer in *tennysoni*). Spiracle of propodeum situate centrally, between the arms of a V-shaped carina just laterad of the lateral carina, the mouth of the V opening laterad. Petiole of abdomen longer and stouter, with a median and dorso-lateral sulcus. Otherwise as in *tennysoni*. Scutum subglabrous cephalad. Pronotum uniformly sculptured. Cephalic femur nearly black, much darker than middle.

From one female taken in jungle, August 7, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2658*, Queensland Museum, Brisbane, the specimen on a tag, head and hind legs on a slide.

In this genus the axillæ are not advanced and the "true lateral carina" of propodeum is a curved sulcus.

3. ENTEDONOMORPHA UNICA new species.

Female:—Length, 1.60 mm. Differs from the genotype in having *two* spurs on the caudal tibiæ.

Dark metallic blue, the abdomen wholly dark metallic green, the wings hyaline; scape and legs very pale yellow except cephalic femora and coxæ and sides of middle coxæ. Differs from *subfusciventris* in having the hind coxæ not brown, the abdomen not suffused with red yellowish, the pronotum is a little more coarsely sculptured, densely punctate, the grooves of scutellum are separated at apex only by a narrow space, the abdomen is shorter, nearly round from dorsal aspect, the petiole shorter, segment 2 occupying two thirds of the surface; the mandibles are 5-dentate. On the propodeum there is a short (abbreviated) carina from caudal margin between the median carina and the curved sulcus which represents the lateral carina (present in *subfusciventris*). Otherwise the same.

From one female caught in jungle, June 25, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2659*, Queensland Museum, Brisbane, the specimen on a tag, head and hind legs on a slide.

A second female, same place, July 11, 1914.

4. ENTEDONOMORPHA VARICORNIS new species.

Female:—Length, 2.40 mm.

Very dark metallic green, the abdomen reddish yellow broadly margined dorsad and ventrad with black, the mesal reddish area broadening distad. Scape and legs white, the hind coxa dark metallic. Pedicel and funicle 1 reddish yellow, funicle 2 suffused with reddish. Scutellum purplish, its grooves widely separated at apex as in *subfusciventris*, the foveæ of each groove united so that the sulcus is *nearly continuous* (distinctly broken somewhat distad of middle). Abdomen conic-ovate. Hind tibial spur single, distinct. Mandibles 4-dentate, the mesal two teeth small. Fourth club joint very short, obtuse, the lateral spur minute, present,

from side of base. Cephalic part of scutum rather broadly glabrous, the pronotum punctate. Funicles 2 and 3 subequal, shorter than 1. Sculptured otherwise as in the genotype except that the scutellum is glabrous, scaly laterad of the grooves, the axillæ glabrous.

From one female caught in jungle, June 25, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2660,* Queensland Museum, Brisbane, the specimen on a tag with type *unica*; hind legs and head on slide with type *unica.*

5. ENTEDONOMORPHA ALBICLAVA new species.

Female:—Length, 1.80 mm. Grooves of scutellum continuous, that is, not broken nor composed of foveate punctures. Caudal tibial spurs *double.*

Dark metallic blue, the scutellum and propodeum dark brassy, the abdomen dark coppery, pale yellow along meson of venter rather broadly and dorsad at base, the petiole brown. Legs, scape and club white, the tegulæ yellowish. Fore wings slightly stained. Grooves of scutellum just separated at apex by a narrow carina. Propodeum and scutellum glabrous, polished, also the parapsides and axillæ and over cephalic third of scutum (that portion cephalad of the parapsidal furrows). Rest of scutum coarsely scaly. Pronotum reticulate but with numerous scattered punctures. Scutum with a setigerous fovea just meso-cephalad of the cephalic ends of the parapsidal furrows. Lateral carinæ of propodeum represented by a curved sulcus, the propodeum with no other carinæ from caudal margin but caudad of the spiracle, the caudo-lateral angle is punctate. Mandibles 4-dentate. Funicle 1 twice longer than wide, longer than usual, 4 quadrate, the club usual. Caudal knees pinkish.

From one female caught in jungle, June 3, 1914 (A. P. Dodd).

Habitat: Grafton, New South Wales.

Type: No. *Hy 2661,* Queensland Museum, Brisbane, the specimen on a tag; head on a slide plus a caudal tibia.

6. ENTEDONOMORPHA SPADICICORNIS new species.

Female:—Length, 1.30 mm. Differs from the genotype in having *two* hind tibial spurs.

Dark brassy green, the vertex rosaceous coppery, the abdomen honey yellow, margined from base to distal two thirds with dark metallic green (segment 2), rather narrowly dorsad, very broadly ventrad. Wings hyaline. Legs, scape, pedicel, distal half of club 3 and distal club joint white, rest of antennæ rich brown. Scutum and parapsides imperial purple. Pronotum delicately scaly, the neck coarsely so, the caudal margin smooth. Scutum smooth at cephalic fourth, the rest scaly, the scales very coarse at caudal half, twice coarser than those farther cephalad; parapsides moderately finely scaly but along about lateral half distinctly more coarsely so, the areas sunken, thus nearly punctures. Scutellum moderately finely scaly, the grooves foveate and widely separated distad, not leaving the lateral margins, straight. Axillæ very finely scaly. Propodeum glabrous; a circular carina surrounding spiracle on the mesal and caudal sides and the lateral carina is shortly indicated from caudal margin; laterad of the circular carina, propodeum finely scaly. Petiole a little longer than wide, longitudinally rugulose. Funicle 1 over twice longer than wide, 2 and 3 each somewhat shorter, subequal. Mandibles 5-dentate, the last two teeth—4 and 5—minute, barely separated (left) or teeth 3 and 4 are minute equal, distinctly separated, very much smaller than 5 which is subequal to 2 (right).

From one female captured July 23, 1912 by sweeping jungle.

Habitat: Goondi (Innisfail), Queensland.

Type: No. *Hy 2662,* Queensland Museum, Brisbane, the specimen on a tag; head and hind legs on a slide.

GENUS GYROLASELLA Girault.

Antea, p. 178, table of genera, line 18, the word *absent* should read *short*.

1. GYROLASELLA SPECIOSA Girault.

Antea, p. 167, line 4 of the description, *side* read *margin*. The marking on the scutum is like the Greek letter Tau of the lower case and on one side the arm is not joined. The stripe across the propodeum passes over the spiracle, partly embracing it. Funicle joints subquadrate, the club with a minute terminal spine.

Forest, December 27, 1912. *Type* on a slide. Length, 1 mm.

2. GYROLASELLA FASCIATA Girault. Genotype.

Length, 1.50 mm. *Antea*, p. 166, line 4 of the description, *distal apex* read *dorsal aspect*. Densely polygonally reticulated (thorax). Reared from Eucalyptus galls. *Types* on a slide. Cephalic axilla metallic green.

3. GYROLASELLA CONSOBRINUS Girault.

Length, 2 mm. A stripe across cheek ventrad of eye. Scape striped obliquely with metallic. Reared from galls, forest, December 12, 1912. *Types* on a slide. Line 6 of abdomen with a line-like caudal offshoot on each side of meson; 7 consisting of a round dot on each side of meson and an area at each lateral margin.

4. GYROLASELLA SPECIOSISSIMA Girault.

The *types* are on a slide. They were captured May 28, 1912 in forest (1,500 feet).

5. GYROLASELLA LINEATA Girault.

Length, 1.75 mm.; slender. Median line of caudal half of scutum metallic green. Also the meson of each axilla except at each end. Line 5 of abdomen curved convexly cephalad. Polygonally reticulated. The *type* is on a tag, the head on a slide.

6. GYROLASELLA QUADRIFASCIATA Girault.

A species of *Pseudiglyphomyia* which see.

7. GYROLASELLA VIRIDILINEATA (Froggatt.)

Cœlocyba viridilineata Froggatt in *antea*, p. 271.

8. GYROLASELLA GRACILIS new species.

Female:—Length, 1.90 mm.

Similar to *viridipronotum*[19] but the marking on the scutum is shaped like the head (side view plus part of stalk) of an ordinary pin, extends to scutellum but the "head" is separated

[19] New species. *Female*:—Length, 1.85 mm. Honey yellow, the wings hyaline, the body marked with bright metallic green as follows: Pronotum, scutum except lateral margins narrowly, meson of scutellum rectangularly, the green not extending quite to the lateral groove, a longer than wide spot at mesal base of postscutellum, mesal half or more of each parapside, axillæ except lateral and caudal margins, propodeum except transversely just cephalad of the spiracle, immediate base of abdomen and seven thin cross-stripes, the first four close together (2 and 3 more prominent, crescentic, 3 embracing 4), 5 broader, joined narrowly to 4 along meson; 6 caret-shaped; 7 near apex, narrowly interrupted at meson; a dot at edge between 5 and 6. Eyes convergent, the facial margin convex Ocellar area, a large, cuneate spot on vertex caudad of eye, pedicel above and a longitudinal stripe along upper side of scape; mesoventer, hind coxa above at base and cephalic femur ventrad, also green. Propodeum noncarinate. Mandibles tridentate. The male is similar but stripes 1-3 of abdomen are confluent.

One male, five females from the collections of the National Museum, Melbourne, labelled "28. From leaf-galls on gum. 3.11,"

Habitat: Melbourne, Victoria.

Types: In the National Museum, Melbourne, the above specimens on a card and a slide with heads and female hind legs.

from pronotum narrowly by yellow; the central green of scutellum is oval; the green of parapsides does not form a continuous piece with the spot on the axilla, the latter here larger, elliptical and isolated from the green of parapsides; the last two stripes on abdomen are also joined along the meson; a green line between each antenna at insertion. Mandibles about 5-dentate.

From one female bred from capsules of red gum November 12.

Habitat: Melbourne, Victoria.

Type: In the National Museum, Melbourne, the specimen on a tag.

9. GYROLASELLA PARTICOLOR new species.

Female:—Length, 1.05 mm.

Golden yellow, the wings hyaline, except that the stigmal knob is dusky; cephalic half (or somewhat more) of scutum, except along lateral margins, an elliptical spot on scutellum at middle of base, a smaller but similar spot at apex (cephalad) of each axilla and the propodeum metallic greenish blue, the abdomen with six submetallic cross-stripes equally distributed, narrow and separate. Mandibles with two distinct outer teeth and three or four minute inner ones. A very small (a mere trace) fuscous area under stigmal knob. Thorax scaly. Legs pallid, the femora dusky above at base. Hind tibial spur distinct. Antennæ dusky yellow, the funicle joints a little wider than long, the second slightly the larger, both distinctly shorter than the pedicel.

Described from one female caught by sweeping in forest December 9, 1913.

Habitat: Northern Queensland (Gordonvale near Cairns).

Type: No. *Hy 2663*, Queensland Museum, Brisbane, the above specimen on a slide.

10. GYROLASELLA DUPLOLINEATA new species.

Female:—Length, 1.15 mm.

Intense golden yellow, the wings hyaline, the legs and antennæ concolorous (scape not seen). Marked with dark metallic green as follows: Extreme latero-caudal angle of pronotum; median line of scutum (narrowly), except at each end (more toward caudal end); suture between scutum and scutellum (narrow); parapsidal furrows except at each end; median line of scutellum except at each end (forming a narrow or thin line as on the scutum); suture between axilla and parapside (only at mesal end); an elongate wedge near tegula; cephalic and caudal margins of propodeum narrowly, the cephalic line dilated near the spiracle and extending laterad no farther than that, the caudal stripe still less broad; extreme base of abdomen at center and six stripes across abdomen, all thin, 2 and 3 close together, 3 with a small nipple at meson caudad, 6 convexly curved and shorter (*i.e.*, not extending laterad as far as the others which do not quite reach the lateral margin); in life, these stripes (1, 4 and 5) appear double; also a line of three narrow dots like spiracles or slits, dorso-laterad from cross-stripes 1-4. Thorax scaly; ocellar areas apparently non-metallic; funicle 2 much wider than long, 1 somewhat so. Venation yellow. Vertex sparsely hispid. Mandibles 4 or 5-dentate.

Described from one female caught with *particolor*.

Habitat: Northern Queensland (Gordonvale near Cairns).

Type: No. *Hy 2664*, Queensland Museum, Brisbane, the above specimen on a slide.

11. GYROLASELLA LATEROGUTTATA new species.

Female:—Length, 1.25 mm.

Honey yellow, the wings hyaline; the legs concolorous. Marked with dark metallic green as follows: A caret-shaped marking on upper face each side; ocellar spots; scape and much of pedicel; distal two thirds of median line of scutum, the line like an inverted exclamation

point; all of disk of pronotum; parapsidal furrows, except at each end; proximal two thirds of median line of scutellum, the line swelling caudad; all of propodeum out to spiracle; six distinct, but thin stripes across abdomen centrally, the stripes abbreviated laterad; and four short transverse dashes or marks, non-co-ordinated with the cross-stripes, along abdomen in the dorso-lateral aspect. Hind tibial spur distinct, rather stout. Mandibles tridentate, the third tooth truncate and with indications of minute teeth. Postmarginal vein nearly as long as the stigmal.

Described from one female caught by sweeping in forest, December 2, 1912 (A. P. Dodd).

Habitat: Northern Queensland (Gordonvale near Cairns).

Type: No. *Hy 2665*, Queensland Museum, Brisbane, the above specimen on a tag, the head and hind tibiæ on a slide.

12. GYROLASELLA FESTIVA new species.

Female:—Length, 2 mm.

Bright lemon yellow, the legs and antennæ concolorous but the scape metallic green along the dorsal edge. Wings hyaline. Marked with brilliant metallic green as follows: A line across neck of pronotum, one across the narrow pronotum appearing like the cephalic margin of scutum; mesal margin of each parapside; a tau-shaped marking centrally on scutum, the upright of the letter extending to caudal margin, the cross-piece at cephalic third; whole of median line of scutellum, the green swollen somewhat centrally; a broad stripe across cephalic margin of propodeum involving the spiracles; the connection between propodeum and abdomen; five stripes across the latter from base to distal third, first stripe connected with immediate base of abdomen at meson, stripes 2-4 connected along the meson, fifth stripe with a short, cephalic projection at meson; a spot laterad of postscutellum; a longitudinal line on axilla and another in the vicinity of the tegula. Postmarginal vein nearly as long as the stigmal. A green stripe across face from dorsal ends of eyes. Mandibles 6-dentate. Antennæ dusky; funicle joints subquadrate. Ocelli in green areas.

Described from one female reared from miscellaneous galls on Encalyptus in forest, October 7, 1913.

Habitat: Northern Queensland (Gordonvale near Cairns).

Type: No. *Hy 2666*, Queensland Museum, Brisbane, the above specimen on a slide.

13. GYROLASELLA IMMACULATIVENTRIS new species.

Female:—Length, 1 mm.

Greenish yellow, the legs and antennæ concolorous, the wings hyaline. The following dark metallic green markings: A line connecting the ocelli; an oval dot on each caudo-lateral angle of pronotum; a rather broad stripe across cephalic margin of scutum not extending quite to margins on each side, its caudal edge emarginate at meson; a longer than wide spot on parapside, caudo-mesal corner; a similar but smaller, oval spot on the axillæ, meso-cephalad, abutting on to the marking on the parapside; a small triangular spot center of base of scutellum; another somewhat swollen one on propodeum about at the spiracle; a shallow V-shaped but conspicuous marking center of propodeum appearing like a bird with spread wings; and a short longitudinal dash just mesad of tegula. Thorax densely scaly.

From one female captured in grass in forest, April 6, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2667*, Queensland Museum, Brisbane, the specimen on a slide.

14. GYROLASELLA TAU new species.

Female:—Length, 2.15 mm.

Very similar to *festiva*, the scutum bearing a green marking like the Greek letter Tau of the lower case or Upsilon of the capital case. Differing however, as follows: The parapsidal furrows are metallic green but not the inner margin of the parapsides; the green median line of scutellum is swollen distad like an inverted exclamation point. The propodeum is green only on each side of the projecting postscutellum; there is a green dot in center of each parapside and another (larger) spot on each axilla mesad; also a spot filling the center of the postscutellum. The abdominal stripes differ in that there are six, the first really consisting of a semicircular loop on each side at base, the apex or top of the loop a little caudad of mesad, the caudal end at lateral margin and accented like a round spot; stripes 2-6 connected along meson by a narrow line, 2 and 3 abbreviated laterad, 5 fainter but complete, some distance from 6 which is near apex and represented by a dot on each side at margin. Ocelli in green spots; just latero-caudad of lateral ocellus a green dash and a crescentic mark ventrad of each; also a narrow green line connecting antennal insertions from thence dorsad to ventral end of each eye. Scape beneath, basal third of pedicel and a curved, long spot above on scape also green. Otherwise similar but the mandibles 5-dentate.

From two females on a card labelled "Mordialloc. Emerged 11-10. F. Spry, Vict."

Habitat: Mordialloc, Victoria.

Types: In the National Museum, Melbourne, the above specimens on a tag, the heads on a slide.

15. GYROLASELLA BRACTEATA new species.

Female:—Length, 0.75 mm.

Yellowish green, the wings hyaline, the shortly extruded valves of the ovipositor black. Marked with dark metallic green as follows: A transverse line across meson of pronotum, a dot at each caudo-lateral angle of pronotum, a short, elliptical marking along meson of scutum at about distal three fourths, a narrow wedgeshaped marking along mesal margin of each parapside a little caudad of middle (extending well toward caudal edge but not reaching it). A little over cephalic half of median line of scutellum rather broadly, dorsal propodeum except lateral margin and cephalo-laterad, a small triangular (apex mesad) spot over propodeal spiracle, two[20] wider than long spots on meson of abdomen a little distad of middle of proximal half and two marginal dots resembling spiracles nearly opposite the central transverse spots but a little caudad of each one respectively. Funicle joints narrower than the club, subequal, somewhat wider than long. Mandibles with about four teeth. Pedicel above metallic at base.

From one female caught in forest, April 10, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2668*, Queensland Museum, Brisbane, the specimen on a slide.

16. GYROLASELLA MULTIPUNCTUM new species.

Female:—Length, 2 mm. Slender, rather large.

Greenish yellow, the wings hyaline; marked with dark metallic green as follows: Three minute marks in a triangle just ventrad of ocelli; two very narrow lines across face, one above antennæ, the other through their insertions; dorsal edge of scape and a spot on each side; proximal third or more of pedicel; somewhat less than distal half of median line of scutum very narrowly; an oval spot in center of parapside, an elongate spot along center of axilla;

[20] A faint third one distad of second.

a dot at center of scutellum at meson, an elongate dot on median line of same at proximal third and a shorter one at distal third; cephalic and caudal margins of propodeum very narrowly; center of immediate base of abdomen; four marginal dots on abdomen along proximal half and a marginal dot a little distance proximad of tip; opposite the four proximal marginal dots a cross-stripe of which the distal three are double, the first of the couplets much more distinct, the stripes not quite reaching the marginal dots; a fifth, unpaired and faint stripe just caudad of the others but farther away from the fourth than the first four are from one another; stripes 2-4 connected very narrowly along the meson. Thorax and vertex with scattered black setæ. First abdominal stripe faint. Thorax scaly. Mandibles tridentate.

From one female caught sweeping grass in forest, April 6, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2669*, Queensland Museum, Brisbane, the specimen on a tag; head, middle and hind tibia on slide with type of *immaculativentris* Girault.

17. GYROLASELLA BIOCULATIVENTRIS new species.

Female:—Length, 0.93 mm.

Like *Zagrammosoma pulchra* Girault but the wings all hyaline, the legs all white except hind coxa and proximal half of hind femur, the sides of the other coxæ metallic; the head white except occiput and cheeks; at meson of vertex caudad, the white descending a short distance into the occiput. The abdomen bears a large eye-spot on each side at margin a little distad of middle and between these and base two obscure transverse white dots in a line longitudinally, the distal one somewhat larger. Some ivory white around the axilla and tegula. The rather long stigmal vein a little darkened. Scape white, antennæ black; funicle 2 a little wider than long, 1 somewhat longer than the pedicel. Mandibles tridentate. Two ring-joints.

From one female captured by sweeping grass and foliage in forest, January 29, 1913.

Habitat: Townsville, Queensland.

Type: No. *Hy 2670*, Queensland Museum, Brisbane, the specimen on a slide.

18. GYROLASELLA HOPKINSI new species.

Female:—Length, 1.05 mm.

Like *worcesteri* Girault but the large conically acuminate marking of scutum plainly reaches the caudal margin (in the other species barely so), the propodeum is wholly dark metallic green except for a transverse, narrow wedge on each side of postscutellum, the mesal margin of each parapside is metallic except at extreme caudal end; and the abdomen bears long, abbreviated stripes, nearly confluent longitudinally and there are three transverse, disconnected marginal dashes (and a fourth minute one caudad). Differs from *pulchra* in being much less robust, in bearing the metallic coloration on the parapsides and having the marking on the scutum subacutely pointed (as in *channingi*) and in the large abdominal cross-stripes. In *pulchra* the stripes on the abdomen are not plain but more or less emarginated, fluted or curved. Ocelli in green areas and cephalo-ventrad of the lateral ocellus, there is a green mark, more or less elongate. In *worcesteri*, the *valves* of the ovipositor are extruded but shortly. Pedicel above at base and sides of scape washed with metallic green. Mandibles tridentate.

From one female caught in forest, March 21, 1913.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2671*, Queensland Museum, Brisbane, the above specimen on a slide.

Dedicated to Cyril G. Hopkins.

19. GYROLASELLA RARIFASCIATUS new species.

Female:—Length, 1.75 mm. Postmarginal vein about half the length of the stigmal.

Lemon yellow, the wings hyaline, the following parts dark metallic green: Occiput except the white ventral fourth, a concave stripe across cephalic margin of clypeus with a projection dorsad at meson and more broadly curving across cheeks around the outline of the ventral ends of the eyes to the occiput; two small spots along the mesal margin of the eye one beneath the other, the upper spot really the ventral end of a metallic green line between the ocelli and running from them down the eye; ocellar areas; prothorax except ventro-lateral aspect; scutum except lateral margin very narrowly; axillæ except lateral and caudal margins, scutellum except narrowly around apex, more broadly laterad of the grooves; postscutellum except lateral and apical margins continuously; propodeum excepting a narrow transverse stripe laterad of middle of postscutellum; base of abdomen circularly (abdominal markings purplish black), tip of abdomen shortly and six cross-stripes, the first four very broadly joined along the meson, the fourth to fifth rather narrowly so, the fifth to the sixth broadly again as though the caudal meson of the fifth was prolonged in the shape of a beehive to the sixth, the latter convexed at meson caudad but not joined to the black at tip; stripe 5 with each end along margin turned cephalad a short distance; each arm of stripes 1-4 slanted cando-laterad. Legs lemon yellow; cephalic coxa with a metallic green spot at base cephalad, femur with a metallic green stripe along dorsal and ventral aspects, on caudal femur, the two joined across lateral aspect at base, the ventral streak short; caudal coxa laterad with a green line across base and half way down the ventral margin; mesoventer; most of meson of abdomen (coppery); dorsal aspect of scape and pedicel; a small spot against base of antenna meso-dorsad. Mandibles trideutate. Flagellum dusky. Thorax densely scaly.

From three females from galls, "Gall No. 25," May, 1914 (H. Hacker).

Habitat: Brisbane, Queensland.

Type: No. *Hy 2672,* Queensland Museum, Brisbane, the three females on a tag; head on a slide with *bracteata.*

20. GYROLASELLA ÆREIGUTTATA new species.

Female:—Length, 0.80 mm.

Pale golden yellow, the wings hyaline, marked with dark metallic green as follows: Ocellar area, a dot on extreme latero-caudal angle of pronotum, two large hemispherical spots on cephalic scutum at cephalic margin, one on each side, midway between meson and lateral margin (reaching to apex of proximal fourth), mesal margins of each parapside, a rather large oval spot on the axilla, a small triangle base of scutellum at meson, a longer than wide spot laterad of apical scutellum and a wider than long one on propodeum opposite base of postscutellum; a small triangle at meson of base of abdomen, a rather broad cross-stripe on abdomen, abbreviated near lateral margins at a little proximad of middle followed by a rather large central triangular spot. Tip of valves of ovipositor black. Dorsal edge of scape metallic. Mandibles 4-dentate.

From one female caught in forest, November 8, 1913.

Habitat: Stewart's Creek (Townsville), Queensland.

Type: No. *Hy 2674,* Queensland Museum, Brisbane, the specimen on a slide.

GENUS CIRROSPILOMELLA Girault.

1. CIRROSPILOMELLA VARIFASCIATA new species.

Female:—Length, 1.55 mm.

Orange yellow, the postscutellum lemon yellow; fore wings with an obscure substigmal spot. Parapsidal furrows and other thoracic sutures black. Propodeum with a distinct median carina, otherwise scaly. Terminal joint of club with an apical spine, funicle 1 somewhat

longer than wide, longer than 2. Mandibles 5-dentate. Thorax scaly. Meson and caudal margin of pronotum black. A wavy stripe at immediate base of abdomen; and four cross-stripes equally distributed between base and apex, the second and third connected along the meson, the third with a stripe against it but which is abbreviated from each end, crossing the meson rather widely; stripe 4 thickened centrally and at meson of cephalic margin with a nipple-like projection; stripe across base of abdomen acutely pointed distad at meson. A dusky stripe on propodeum in the place of lateral carinæ. A marginal small spot on abdomen between stripe at baso and stripe 1, this spot obscurely continued toward meson but not reaching it. Postmarginal vein shorter than the stigmal.

From one female caught in forest, June 17, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2675,* Queensland Museum, Brisbane, the specimen on a tag.

2. CIRROSPILOMELLA FASCIATA Girault.

Synonym: *Cirrospiloidelleus fasciativentris* Girault.

There are but four cross-stripes on the abdomen. No distinct median carina on propodeum. Wings slightly stained. Funicle 1 a half longer than wide; club with a small, distinct fourth, nipple-like joint without a terminal spine. Types re-examined.

GENUS EURYSCOTOLINX Girault.

1. EURYSCOTOLINX GUTTATIVERTEX Girault.

A female, Cairns, Queensland, October 25, 1911 sweeping foliage and grass in a bog. The marginal stripe of abdomen and the spot were hardly developed. The spot on the vertex was distinct.

1. EURYSCOTOLINX IMMARGINATUS new species.

Female:—Length, 1.85 mm.

Like the genotype but the abdomen has no black, the pedicel is concolorous with the scape and the funicle joints are subequal, all distinctly longer than the pedicel (each about somewhat over twice longer than wide). The scape along its dorsal edge bears distinctly longer and more numerous bristles. The body is slenderer, the postmarginal vein somewhat shorter, the wings stained along the venation. Spot in center of vertex not very distinct. Mandibles 5-dentate.

From one female captured in jungle, March 1, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2673,* Queensland Museum, Brisbane, the specimen on a tag; hind tibiæ and head on a slide.

GENUS PSEUDIGLYPHOMYIA Girault.

1. PSEUDIGLYPHOMYIA FUSCA Girault.

A species of *Cirrospilopsis.*

2. PSEUDIGLYPHOMYIA QUADRIFASCIATA (Girault).

From *Gyrolasella.*

3. PSEUDIGLYPHOMYIA OCCIDENTALIS new species.

Female:—Length, 1.30 mm.

Similar to *rusticus* Girault but the exclamation-point-like marking along meson of scutellum is narrower and longer, reaching to distal fifth, the mark on axilla is not a minute dot but a minute spot, ovate; the abdomen bears three distinct cross-stripes commencing at middle, the distal one wider and blacker; also from each side out from base two cross-stripes

are indicated by transverse spots and one also just before extreme apex. In both species the cephalic margin of the scutum is broadly jet black. Funicle 2 a little longer than wide. Propodeum finely sealy, without lateral carinæ but with a distinct median one. Mandibles about 6-dentate.

From one female caught in forest, April 15, 1914 (A. P. Dodd).

Habitat: Cloncurry, Queensland.

Type: No. *Hy 2676*, Queensland Museum, Brisbane, the specimen without head on a tag.

4. PSEUDIGLYPHOMYIA NIGRISCUTUM new species.

Female:—Length, 1.25 mm.

Black, the following parts orange yellow: Head (except center of occiput and dusky ventral margin of face), pronotum except face and caudal margin across meson, parapsides, lateral margin of each axilla rather broadly, scutellum laterad of grooves except at base, distal third of scutellum between the grooves and the postscutellum. Propodeum rugulose but the median carina is distinct. Legs (except hind coxa) and proximal half of scape pale yellowish. Caudal femur a little dusky at proximal half. Postmarginal vein not quite as long as the stigmal, the fore wings lightly dusky across from the whole marginal vein. Mandibles 5-dentate. Funicle 1 a little longer than wide, 2 barely so, subequal to the pedicel. Terminal spine of club distinct, the club as long as the funicle.

From one female captured in forest, May 12, 1914 (A. P. Dodd).

Habitat: Chindera (Tweed River), New South Wales.

Type: No. *Hy 2677*, Queensland Museum, Brisbane, the specimen on a tag.

PSEUDIGLYPHUS new genus.

Antennæ short, capitate, 9-jointed with two large ring-joints, the club large, 3-jointed. Abdomen pointed conic ovate, from above depressed and pointed ovate, the ovipositor shortly exserted. Segment 2 of abdomen longest, 7 next so, the former occupying a little less than a fourth of the surface, its caudal margin straight. Postmarginal vein a little shorter than the stigmal. Propodeum with a solid median carina, the spiracle small, suboval. Mandibles with two larger outer teeth and but a single inner smaller one. Differs from *Pseudiglyphella* in having the axillæ much advanced. Scutellum with a lateral grooved line.

1. PSEUDIGLYPHUS GROTIUSI new species. Female. Genotype.

Length, 1.50 mm.

Dark steel or purplish blue, the wings hyaline, the legs concolorous except the knees, the intermediate and caudal tibiæ (except at base of the latter) and the three proximal tarsal joints which are whitish. Scutum coarsely scaly, the scutellum between the grooves, postscutellum and the propodeum glabrous; scutellum scaly laterad of grooved line. Segments 2 and 3 of abdomen glabrous, the rest reticulated; segment 3 very short. Antennæ dusky yellowish, the scape concolorous with the body, the pedicel dark, subequal in length to funicle 1 which is longer than wide; funicle 2 subquadrate. Distal club joint terminating in a small nipple. Type captured by sweeping jungle growth along a forest streamlet, June 14, 1913 and is mounted on a tag (head and caudal tibiæ on a slide with the type appendages of *Stomatoceras aureus* Girault). A second female, type locality, forest, August 27, 1913.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2678*, Queensland Museum, Brisbane.

The species is respectfully dedicated to Hugo Grotius.

2. PSEUDIGLYPHUS SPADICIVENTRIS new species.

Female:—Length, 1.30 mm.

Differing from *grotiusi* Girault in having the abdomen chestnut brown, the median carina of propodeum solid (in *grotiusi* of the same shape exactly!) and a broad depression in the place of the lateral carina (apparently), in the center of which is the minute spiracle, the propodeum apparently the same as in *grotiusi*. The ovipositor is barely exserted (so in the genotype). The legs (except coxæ) are white, washed slightly but distinctly with dusky, the antennæ white, the two funicle joints subequal (1 slightly longer than 2 which is quadrate); scape and pedicel dusky. Mandibles tridentate. Abdomen not densely reticulated as in *grotiusi*, the scalines less distinct. Compared with an authentic specimen of *grotiusi* and the two are alike excepting the colorational differences in the abdomen and legs.

From one female caught sweeping in forest, along mountain foothills, July 9, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2679*, Queensland Museum, Brisbane.

In this genus the scutum is short, the axillæ much advanced, reaching a little over half way to cephalic margin of scutum, the short, complete parapsidal furrows meeting them. Mandibles 3-dentate. There appears to be a carina laterad and mesad of the spiracle, converging caudad, forming an oblique V whose arms inclose the spiracle.

Genus MESTOCHARELLA Girault.

1. MESTOCHARELLA FERALIS Girault.

Slender. Mandibles tridentate, the third tooth truncate. Club terminating in a little spur. Postmarginal vein shorter than the stigmal. Funicles 1-3 longer than wide, cylindrical. The type is on a tag, the head on a slide. Wings ample. Jungle, April 4, 1913.

In *antea*, p. 264, line 4, *Atoposomoidella channingi* is a naked name. *Gyrolasella channingi* is referred to.

Tribe EUPLECTRINI.

Genus PACHYSCAPHA Howard.

A male specimen with enormously dilated scape but otherwise like *Euplectrus* in every detail was taken in jungle at Tweed Heads (Tweed River), New South Wales, May 3, 1914 (A. P. Dodd). The stigmal vein was distinctly shorter than the postmarginal.

Genus EUPLECTRUS Westwood.

Antea, p. 273, line 1, *2-jointed* should read *solid*. The mandibles are absent in this genus and there are two ring-joints. The antennæ are inserted ventrad of the middle of the face, near the clypeus. The species described by Girault from Australia agree in these particulars and the descriptions should be understood accordingly.

1. EUPLECTRUS XANTHOCEPHALUS Girault.

Antea, p. 274, line 3, *one* read *two* and *3-jointed* read *solid*.

Length, 2.10 mm. The *type* female is on a tag, the head on a slide. It was captured April 15, 1912.

2. EUPLECTRUS CAIRNSENSIS Girault. Female, male.

Length, 2.15 mm. Male about the same. The *types* consist of a single pair on a tag. The female type was captured October 25, 1911 (Cairns), the male May 11, 1913 at Gordonvale.

A female at Kuranda, Queensland, jungle, May 14, 1913.

3. EUPLECTRUS MELANOCEPHALUS Girault.

Length, 2.20 mm. The *type* was captured in jungle, May 8, 1913 and is on a tag.

4. EUPLECTRUS PULLIPES new species.

Female:—Length, 1.80 mm.

Colored like *Euplectromorpha nigrifemur* (Girault), the tibiæ and tarsi yellow, also the middle coxa; but the abdomen centrally is more narrowly yellow, the marginal black being broad. Scutellum and axillæ uniformly scaly reticulate, the scutum a little rougher but similar, the pronotum much finer, its neck, however, as rough as the scutum. Longest spur of hind tibiæ half the length of the hind tarsus. Antennæ 9-jointed, two ring-joints, club solid. Postmarginal vein much longer than the stigmal. Mandibles absent. Scutum and scutellum simple; yellow of abdomen paler toward base; ventrad yellow, margined with black as the dorsal surface, the distal part of the black long. Funicle and club fuscous; funicle 1 somewhat longer than the pedicel, longest, 2 and 3 each slightly shorter, 4 a little longer than its width. Club a little longer than funicle 1 which is distinctly longer than wide. Like the other species. Sculpture of scutum finer cephalad. Compared with *Euplectromorpha nigrifemur.*

From one female caught by sweeping in jungle, May 9, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2680,* Queensland Museum, Brisbane, the specimen on a tag.

5. EUPLECTRUS CARINISCUTUM new species.

Female:—Length, 3 mm.

In my table of Australian species runs to *scotti* Girault but upon comparison with the type of that species I find the following differences: In coloration a striking difference is that the cross-stripe on distal abdomen connecting the marginal stripes at apex is broadly interrupted at meson and also it is much broader extending to apex; there is thus formed a rather broad median path of yellow from a little less than proximal three fourths to apex. The scutellum is shagreened (or reticulated into raised points) instead of longitudinally striate, the axillæ show very faint sculpture. Otherwise about the same in all details mentioned in the description of *scotti* except that the antennæ are black distad of funicle 2. Club solid; mandibles absent. Two ring-joints, the first shortest.

From one female captured in jungle, April 2, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2681,* Queensland Museum, Brisbane, the specimen on a tag, head on a slide.

6. EUPLECTRUS KURANDAENSIS Girault.

Length, 2.20 mm. *Type* captured along edge of jungle, May 20, 1913 and is on a tag.

EUPLECTROMORPHA new genus.

The antennal club is solid, the mandibles absent. The genus was not described elsewhere as intended. See *antea.*

1. EUPLECTROMORPHA UNIFASCIATA Girault.

Length, 1.65 mm. *Antea,* p. 276, line 3 of the description, *other* read *others.* Flagellum dusky. The *type* was captured on October 28, 1911 and is on a tag, the head and a caudal leg on a slide (with the type head of *Spalangia australiensis* Girault). First ring-joint very short.

2. EUPLECTROMORPHA NIGRIFEMUR (Girault).

Length, 2.50 mm. *Type* re-examined. It was captured May 9, 1913 and is on a tag. The description in *antea* is correct. Distal three funicle joiuts subequal, subglobular, the first somewhat longer. Maxillary palpi 2-, the labial 1-jointed. A second female, type habitat, July 24, 1913.

3. EUPLECTROMORPHA VARIEGATA new species.

Female:—Length, 2.15 mm.

Like *malandaensis* but reddish, the prothorax black except two narrow, wider than long spots on each side of meson dorsad, the lateral portions of propodeum black and somewhat over distal third of abdomen dorsad (but broken by yellowish meso-cephalad); lateral margin of abdomen to apex of proximal third from distad, dusky black. Abdomen yellowish brown. Legs reddish. Caudal half of each parapside and of scutum and all of scutellum except a narrow conical reddish marking along meson from base to apical third, contrasting lemon yellow. Head lemon yellow, reddish at center of vertex, jet black along the scrobes and on occiput except ventrad. Funicle 1 longest, somewhat longer than wide, the others oval; pedicel shorter thau funicle 1. Wings a little stained. Otherwise about as in *malandaensis*. Antenuæ yellowish, suffused with dusky. Tarsi yellow.

From one female caught in forest, May 12. 1914 (A. P. Dodd).

Habitat: Chindera, New South Wales.

Type: No. *Hy 2682*, Queensland Museum, Brisbane, the specimen on a tag.

4. EUPLECTROMORPHA MAGNIVENTRIS new species.

Female:—Length, 3.05 mm.

Like *Euplectrus melanocephalus* Girault but a little over a distal third of the abdomen is purplish black, the marginal coloration is broader except just out from base where it nearly disappears and distad in the black there are two small white triangles at the meson, the caudal one somewhat larger and just before apex. The body is more robust; abdomen and legs white except as noted and the hind coxa. Head subæneous. Scape white, pedicel dusky, rest of antenna black. Funicle 1 elongate, over twice longer than wide, longer than the club; other joints of funicle shortening, 2 a fourth shorter than 1, 4 slightly shorter than the club, much larger than the pedicel. Mandibles absent. Anteunæ 9-jointed, the club solid. Hind tibial spurs unequal, the largest not quite half the length of the tarsus. Pronotum and scutum with long whitish pubescence.

From one female caught in jungle, August (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2683*, Queensland Museum, Brisbane, the specimen on a tag; head and a hind tibia on a slide.

A. EUPLECTROMORPHA MAGNIVENTRIS CHINDERAENSIS new variety.

Female:—Length, 2.75 mm.

Black, the head submetallic, the wings hyaline, scape and abdomen whitish, abdomen dorsad black at distal fourth and at immediate base, the intervening white portion margined narrowly laterad with the black, but the marginal stripe besides being thin (except distad where it abruptly widens) is distinctly interrupted at apex of proximal fourth. Wings hyaline. Similar to typical form but the marginal stripe of abdomen is thinner and the legs are yellowish brown (except hind coxa) instead of white. The abdomen also appears to be flatter and longer. Compared with type of typical form.

From one female caught, May, 1914 (A. P. Dodd).

Habitat: Chindera (Tweed River), New South Wales.

Type: No. *Hy 2684*, Queensland Museum, Brisbane, the female on a tag.

5. EUPLECTROMORPHA ÆREICEPS new species.

Female:—Length, 1.87 mm.

Black, the head dark metallic green, the wings hyaline; coxæ, hind femur and *apex* of hind tibiæ distinctly black. A small triangular area at base of abdomen, dorsad and ventrad yellowish white; proximal third of caudal femur white; other femora orange toward tip. Flagellum black, the scape white. Pronotum (except caudal margin), cephalic part of scutum and cephalic half of parapsides, scabrous, rest scaly like the scutellum and axillæ. Scutum hairy. Propodeum glabrous, with the usual median carina and a curved, deep groove in the place of lateral carinæ. Funicle 1 slightly longer than the club, about twice longer than wide, the other three funicle joints subequal, somewhat longer than wide, longer than the pedicel. Club without a terminal spine.

From one female caught in jungle, August 20, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2685*, Queensland Museum, Brisbane, the specimen on a tag.

EUPLECTROMORPHELLA new genus.

Differs from *Euplectromorpha* Girault in bearing mandibles.

1. EUPLECTROMORPHELLA CICATRICOSA new species.

Female:—Length, 2 mm.

Black, the wings subhyaline, the hind coxæ black, except above; abdomen, legs and antennæ orange yellow, the abdomen margined all round with black. Thorax finely scaly, the scutum smoother cephalad, the propodeum glabrous, with a median carina. Antennæ 9-jointed, with two ring-joints, the club solid, the four funicle joints subglobular and more or less equal, the pedicel somewhat smaller. Mandibles 7-dentate. Resembles *Euplectrus melanocephalus* Girault. Fourth funicle joint somewhat wider than long, somewhat shortest. Club without a distinct nipple.

Described from one female caught by sweeping in forest and jungle, August 22, 1913.

Habitat: Northern Queensland (Gordonvale near Cairns).

Type: No. *Hy 2686*, Queensland Museum, Brisbane, the specimen on a tag; head on a slide.

TRIBE OPHELININI.[21]

The genus *Ophelinus* Haliday was inadvertently omitted in the table of genera.

GENUS ALOPHOMORPHA Girault.

This genus belongs to the Eulophini which see.

GENUS SYMPIESOMORPHELLEUS Girault.

Synonym: *Diglyphomorphomyia* Girault.

The club terminates in an unarticulated nipple.

1. SYMPIESOMORPHELLEUS SUTTNERI Girault.

Length, 1.96 mm. The *type* is on a tag, the head and a caudal leg on a slide. It was captured in jungle, May 26, 1913. The abdomen is purplish black, yellow at base.

[21] See *Entedonomorpha*

2. SYMPIESOMORPHELLEUS THOREAUINI new species.

Female:—Length, 1.58 mm.

Shining black, the legs, scape and a large wedgeshaped area in dorsal abdomen from base, yellowish brown; the yellow abdominal area originates at base where it is narrower but truncate; distad it extends not quite to middle and there is broadly truncate; for its entire length it fills the abdominal dorsum except narrowly along each lateral margin (the margining black, widening distad. Wings hyaline. Mandibles 6-dentate. Funicle joints subequal, oval, 1 a little the longest, larger than the globular pedicel; club ending in the usual nipple-like "joint" (nonarticulated). Median carina of propodeum solid, the spiracle round, small, in a roundish depression; a more or less distinct, obtuse spiracular "groove." Segment 2 of abdomen occupying somewhat over a fifth of the surface, longest. Parapsidal furrows represented by narrow carinæ which curve off before reaching the pronotum which is transverse-quadrate. Axillæ not advanced. Grooves of scutellum broadly separated distad (nearly for entire apical margin). Thorax distinctly moderately coarsely scaly, the propodeum glabrous; dorsal abdomen distad with very delicate scaly sculpture. Marginal vein nearly thrice the length of the stigmal which is distinctly shorter than the postmarginal.

From one female caught by sweeping forest, June 7, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2687*, Queensland Museum, Brisbane, the specimen on a tag.

Dedicated to Henry David Thoreau.

3. SYMPIESOMORPHELLEUS PAUCIFASCIATUS new species.

Female:—Length, 1.75 mm.

Orange yellow, the wings hyaline, the abdomen and legs a little lighter yellow, the former narrowly margined down each dorsal edge with blackish and with two distinct, black cross-stripes at distal third, the two joined along the meson by a short median black line. Anteunæ concolorous, all the funicle joints larger than the short pedicel, the first longest, distinctly longer than wide, the others subglobular. Mandibles 7-dentate. Segment 3 of abdomen only half the length of 2, which occupies about a fourth of the surface. Thorax scaly. Median carina of propodeum paired, forking caudad.

Described from one female caught by sweeping over all parts of island, a mile from mainland, forest, December 25, 1911.

Habitat: Northern Queensland (Double Island near Cairns).

Type: No. *Hy 2688*, Queensland Museum, Brisbane, a female on a tag; head and hind legs on a slide.

4. SYMPIESOMORPHELLEUS ALBICLAVA new species.

Female:—Length, 1.80 mm.

Orange yellow, the abdomen honey yellow, the legs concolorous with the abdomen. Scape and club yellowish white, pedicel and funicle 1 orange, other funicle joints black. Abdomen narrowly obscurely margined with black from base to distal three fourths, the marginal stripe broken into obscure dots. Fore wings slightly stained with yellowish. Antennæ as in *nigriscutellum* also the venation. Vertex lemon yellow. Thorax scaly, the scutum rather thickly pin-punctured, the scutellum with only a few of these punctures. Immediate tip of abdomen black. Postscutellum platelike. Propodeum glabrous, finely scaly laterad, with the usual three carinæ—also a carina just laterad of the spiracle. Segment 2 of abdomen occupying a third of the surface. Mandibles about 8-dentate.

From one female caught November, 1912.

Habitat: Gordonvale, Queensland.

Type: No. *Hy 2689*, Queensland Museum, Brisbane, the specimen on a tag; head and hind legs with the slide type of *Euryscotolinx immarginatus*.

In this genus, the scutellum really bears four grooved lines, the second groove shorter and visible only from dorso-laterad, the first as described—from dorsal aspect near lateral margin of scutellum.

Euplectrophelinus differs merely in having the club solid and a very short abdominal petiole. Otherwise it is exactly similar except that segment 2 of the abdomen is longer. *Sympiesomorphelleus* is the same as *Diglyphomorphomyia*. All the species bear four grooved lines on the scutellum but as described not as in the Tetrastichini and probably most of the genera with grooves on scutellum are the same. The presence of the second groove is not a good diagnostic character at all and I have now ignored it. The species *E. saintpierrei* has the punctures of the groove of scutellum isolated; in the species of *Sympiesomorphelleus* they are joined.

Genus ALOPHOMORPHELLA Girault.[22]

Female:—In my table of genera runs to *Alophomorphella* Girault but the grooves of the scutellum are narrow, delicate and merely curve toward each other at apex, the abdomen is sessile and the propodeum bears a pair of close, narrow median carinæ, the distinct, conspicuous, median groove-like impressions of scutum (distal half) and scutellum (proximal three fourths) absent. Lateral carina of propodeum represented by an oblique line of foveæ which is caudad, far from the spiracle. Mandibles 5- and 6-dentate. Marginal vein subequal to the submarginal, the stigmal long, somewhat over a third the length of the marginal, the postmarginal nearly half the length of the marginal. Parapsidal furrows not reaching pronotum. Head triangular. Axillæ advanced but not greatly.

1. ALOPHOMORPHELLA ASPERITERGUM new species

Female:—Length, 2.70 mm.

Bright æneous, the legs (except base of cephalic and all of other coxæ) and scape except slightly above at tip, orange yellow, the tibiæ and tarsi whitish; antennæ black; wings hyaline but fore wings with a distinct but not large, rounded, smoky spot centrally just opposite apex of stigmal vein. Venation brown. Abdomen dark coppery except at base. Head sculptured finely. Pronotum, scutum and parapsides punctate, postscutellum, scutellum and axillæ densely scaly shagreened. Propodeum delicately scaly, roughly scaly like the scutellum laterad of the oblique lateral groove (commencing just at the mesal margin of spiracle which is moderate and round-oval, cephalad). Abdomen finely scaly except the green segment 2 which is not long. Abdomen depressed, conical, as long as the rest of the body. Hind coxa dorsad scaly. Antennæ inserted in the middle of the face, the third club joint minute and with a distinct terminal spine. Funicle 1 about twice longer than wide, 4 a little longer than wide, all longer and larger than the pedicel which is only a little longer than wide. Funicles 2 and 3 subequal, somewhat shorter than 1. Postscutellum much shorter than scutellum. Pronotum normal.

From one female caught on forest uplands, May 30, 1914 (A. P. Dodd).

Habitat: Maclean (Clarence River), New South Wales.

Type: No. *Hy 2690*, Queensland Museum, Brisbane, the female on a tag; caudal tibiæ and head on a slide.

Very similar indeed to *niveipes* but the legs pure white in that species, the propodeum mesad of the spiracle less distinctly scaly, the abdomen with a short petiole, the spot on fore wing somewhat longer.

[22] Other species a few pages beyond. The species here were intended for a new genus.

2. ALOPHOMORPHELLA NIVEIPES new species.

Female:—Length, 2.5 mm.

Dark metallic green, the legs (except caudal coxæ) and the scape white. Scutellum and axillæ brassy. Fore wings with a long-ovate dusky spot with its axis obliqued caudo-proximad from the end of the stigmal knob; but this spot does not touch the stigmal vein being half the length of that vein directly caudad of its apex. Antennæ black; funicle 1 distinctly the longest, elongate, twice the length of the pedicel, longer than the club; funicles 2 and 3 subequal, 4 shorter than 3, slightly longer than wide; third club-joint nipple-like, itself with a short, stout terminal nipple. Mandibles about 6-dentate. Stigmal vein a little over a third the length of the marginal, shorter than the postmarginal yet slender. Grooves of scutellum joined around apical margin. Abdomen glabrous, distad finely scaly. Thorax densely punctate, the axillæ and scutellum more densely scaly, the propodeum glabrous, with a distinct median carina which has a narrow sulcus along each side of it; lateral carina represented by a straight line of foveæ running meso-caudad from the spiracle to near apex of the median carina; this lateral line of foveæ does not reach the spiracle by the latter's own diameter and a little more. Spot on fore wing not twice longer than wide.

From one female taken in jungle, May 3, 1914 (A. P. Dodd).

Habitat: Tweed Heads (Tweed River), New South Wales.

Type: No. *Hy 2691*, Queensland Museum, Brisbane, the specimen on a tag; head and caudal tibia on a slide.

PARENTEDON new genus.

For diagnosis see *antea*, p. 279.

1. PARENTEDON AUSTRALIS new species.

Length, 2 mm. The types were taken in forest, December 27, 1912 and January 8, 1913.

2. PARENTEDON SOBRINUS new species of Girault and A. P. Dodd.

Female:—Length, 1.95 mm.

Similar to the genotype but the abdomen is more uniform in color (not submetallic distad) and darker, the margins still obscurely darker. The following structural differences: The grooves on the scutellum are separated around distal margin by only slightly more than their own width (distinctly more separated in *australis*); on the propodeum there are a number of weak oblique carinæ from the side of the distinct median carina and also from the cephalic margin of propodeum mesad of the spiracle, the longitudinal space between the two groups of carinæ, smooth, the lateral of the two separated from the small round spiracle by a broad complete sulcus; caudal margin of propodeum carinated, turning up toward the spiracle and thus forming the more or less distinct lateral carinæ as in *australis*; the spiracle is somewhat larger in this species; sculpture of mesothorax alike in both species; mandibles with only eleven teeth. Antennæ dark, scape whitish, the pedicel so beneath; funicle 4 quadrate.

Described from one female caught by sweeping in forest, June 18, 1912 (A. A. Girault).

Habitat: Northern Queensland (Gordonvale near Cairns).

Type: No. *Hy 2692*, Queensland Museum, Brisbane, the above specimen on a tag.

Both *australis* and the above species have a hoodlike neck at apex of propodeum.

3. PARENTEDON SIMILIS new species of Girault and A. P. Dodd.

Female:—Length, 1.50 mm.

Similar to the preceding species (*sobrinus*) but slenderer, the abdomen slenderer and brownish interiorly (along mesal portion) only, the femora and tibiæ nearly white, the abdomen narrower and with a short, distinct petiole and the second segment occupies only a third of the surface (not a half or nearly). Mandibles 14-dentate. Segments 3 and 4 of abdomen,

long, subequal, combined slightly longer than segment 2 (not so in *sobrinus*). Grooves of scutellum separated at apex by less than their own diameter. Abdomen black, or nearly. Oblique carinæ from median carina of propodeum very long and oblique.

Described from one female caught by sweeping in a jungle pocket, November 16, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2693*, Queensland Museum, Brisbane, the above specimen on a tag; head and hind tibiæ on a slide.

4. PARENTEDON FRATERCULUS new species.

Female:—Similar to *similis* but the fore wings stained yellow, the mandibles 15-dentate, the second segment of abdomen a little shorter, the abdomen sessile, the hind wing a little narrower, the grooves of scutellum separated by a little more than their width. Oblique carinæ from median carina of propodeum not so distinct as in *similis* and shorter and less oblique.

From one female captured in a meadow, February 24, 1912.

Habitat: Cooktown, Queensland.

Type: No. *Hy 2694*, Queensland Museum, Brisbane, the specimen on a tag; head and hind tibiæ on a slide.

TABLE TO THE AUSTRALIAN SPECIES OF *PARENTEDON* GIRAULT.

Grooves of scutellum separated at apex by not more than their own width or only slightly more.

Segment 2 of abdomen occupying half the surface, 3 and 4 united, much shorter than it; mandibles 11-dentate; wings subhyaline; abdomen sessile .. .. *sobrinus* G. & D.

Segment 2 of abdomen occupying only a third or somewhat more of the surface; wings hyaline; mandibles 14-dentate; abdomen with a short petiole .. *similis* G. & D.

The same; wings yellowish; mandibles 15-dentate; abdomen sessile *fraterculus* Girault.

Grooves of scutellum at apex separated plainly more than their own width.

Segment 2 of abdomen occupying one third of surface; wings yellowish; mandibles 13-dentate .. .. *australis* Girault.

GENUS OPHELIMINUS Girault.

1. OPHELIMINUS GROTIUSI Girault.

Length, 2.50 mm. The *type* is on a tag, the head and caudal tibiæ on a slide. It was taken in forest near a streamlet, June 27, 1913.

2. OPHELIMINUS PULCHERRIMUS new species of A P. Dodd.

Female:—Length, 2.80 mm.

Very similar to *consonus* Girault[23] but all the coxæ metallic, except apical half of cephalic pair; mandibles 5-dentate; abdomen with more yellow dorsad, the basal half being yellow, margined with purplish black but at the caudal margin of the yellow at meson there is an extension from the black into the yellow area (in *consonus* the yellow extends to less than half the abdomen, is more broadly margined with purplish and with no black extension into the yellow at meson); the abdomen is no longer than the thorax (in *consonus* it is distinctly longer), the median carina of propodeum is distinct and the stigmal vein is shorter as in *grotiusi* Girault.

From one female caught sweeping in forest, January 27, 1914 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2695*, Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

[23] *Pardiaulomella*.

3. OPHELIMINUS FUCOSUS new species.

Female:—Length, 2.60 mm.

Dark æneous coppery, the head and propodeum metallic green, the wings hyaline, pronotum except the caudal margin broadly, legs and abdomen deep golden yellow, the tegulæ, cephalic two pairs of coxæ and all femora pale yellow. Scape orange yellow, dusky along dorsal edge. Base of abdomen centrally ventrad, base and the lateral margins dorsad for about proximal third, a dot at lateral margin dorsad just distad of end of the marginal stripe, tip of abdomen and of ovipositor valves and a large frustum-shaped marking dorsad centrally a little distad of the pair of marginal dots blackish metallic green (dark metallic green at base of abdomen dorsad). Postmarginal vein somewhat over twice the length of the stigmal, the latter about a fifth the length of the marginal. Propodeum noncarinate, somewhat more finely punctate than the rest of the thorax. Mandibles 6-dentate. Antennæ with funicles 1-3 subequal, elongate (nearly thrice longer than wide), 4 somewhat shorter; club not quite as long as funicle 3. Like the other species. Mesal margin of the marginal stripe of abdomen scalloped. In all the species of the genus, the parapsidal furrows curve off laterad not reaching the pronotum.

From one female caught by sweeping forest in swamp, May 14, 1914 (A. P. Dodd).

Habitat: Chindera (Tweed River), New South Wales.

Type: No. *Hy 2696*, Queensland Museum, Brisbane, the specimen on a tag; head and hind tibiæ on a slide.

Genus DIGLYPHOMORPHOMYIA Girault.[24]

Antea, p. 281, in the description, line 3, *slightly* read *somewhat*. The antennæ bear *two* ring-joints.

1. DIGLYPHOMORPHOMYIA NIGRISCUTELLUM Girault.

One female, type habitat, May 29, 1913. There were seven teeth in the mandibles in this specimen. In *antea*, line 2 of the description, insert *quite* after *not*; line 3, *very obscure darker* read *four dusky*; line 4 insert *numerous* after *with*; line 4 after *disk* a semicolon and *also similar punctures on the lemon yellow caudal part of scutum*. The club terminates in a long, thick spur. Caudal knees reddish. Type re-examined.

Genus ALOPHOMORPHELLA Girault.[25]

1. ALOPHOMORPHELLA ILLUSTRIS Girault.

The fore wings bear a faint sooty round spot a little caudad of the middle of the blade, opposite the stigmal knob; stigmal vein about a third the length of the marginal. Type re-examined.

2. ALOPHOMORPHELLA EDISONI new species.

Female:—Length, 1.05 mm.

Dark metallic green, the wings hyaline, the abdomen purple, ventrad yellowish, dorsad at base with a yellowish brown triangle whose straight base is distad; this triangle extends nearly to margin on each side and is on proximal fourth. Legs white. Scape pale yellow; funicle dusky yellow, club dusky black. Funicle joints globular yet a little longer than wide, a little smaller distad, 1 subequal in length to the pedicel. Mandibles 5-dentate. Club with a distinct terminal spine. Parapsidal furrows delicate yet easily found, curving off laterad, not reaching pronotum by some distance; a setigerous, minute puncture just mesad of distal end of each furrow, the latter running to the axilla before the latter's mesal apex. Grooves of

[24] Equals *Sympiesomorphelleus*.

[25] *See* preceding few pages for other species. Only the genotype bears the median thoracic impression.

scutellum distinctly separated for some distance at apex. Scutum coarsely scaly, except at cephalic margin, there less coarsely so (like the scutellum and axillæ). Median carina of propodeum narrow, lateral carinæ absent, the minute round spiracle with several foveæ mesocaudad of it, forming a short sulcus mesad of spiracle. Propodeum glabrous. Petiole short but distinct. Abdomen depressed. Postmarginal vein much longer than the stigmal, the latter a fourth the length of the marginal. Third club joint much the smallest. Meson of thorax flat.

From one female taken in forest, May 16, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2697*, Queensland Museum, Brisbane, the specimen on a tag; head and hind leg on a slide.

Respectfully dedicated to Thomas Alva Edison.

3. ALOPHOMORPHELLA ALBICLAVA new species of Girault and A. P. Dodd.

Female:—Length, 2.50 mm.

Like the genotype but dark metallic blue, the pronotum, scutellum and propodeum dark purplish; abdomen suffused with yellow medially for proximal two thirds; antennal club white like the legs; scutum and scutellum without a median longitudinal depression; grooves of scutellum more convex, closer together; thorax with very fine scaly sculpture, the prouotum reticulately rugulose; first funicle joint much longer, three times as long as pedicel and twice as long as fourth funicle joint; only twice as long as pedicel and one third longer than fourth funicle joint in the genotype; mandibles only 4-dentate.

Described from one female caught by sweeping in jungle, June 7, 1913 (A. P. Dodd).

Habitat: Northern Queensland (Gordonvale near Cairns).

Type: No. *Hy 2698*, Queensland Museum, Brisbane, a female on a tag, the head and hind legs on a slide.

GENUS DIAULINOPSIS Crawford.

Head thin; scape flattened and somewhat widened; funicle 2-jointed, club swollen, 3-jointed, with a terminal spine, two ring-joints. Parapsidal furrows deeply impressed. Scutellum with two parallel furrows. Propodeum nonearinate but with obscure spiracular sulci. Postmarginal vein almost as long as marginal. Caudal tibiæ with two weak spurs, the shorter one very obscure. Abdomen sessile.

The male is the same but the scape is much more widened, the club not enlarged. After Crawford (1912).

1. DIAULINOPSIS SUBATRICORPUS new species.

Female:—Length, 1.30 mm.

Shining black, with a faint purplish tinge, the wings lightly sooty, the legs (except coxæ and hind femur) and scape white. Thorax finely scaly, the propodeum subglabrous, not showing sculpture, perfectly plane (*i.e.*, noncarinate, nonsulcate), the spiracle small, at cephalic margin. Antennæ as in *Atoposoma* Masi, the funicle and club compressed but the funicle and pedicel as in the genotype of *Diaulinopsis* (as described); club also as described for the genotype but somewhat shorter. Abdomen as long as the rest of the body, the black valves of the ovipositor distinctly but shortly extruded. Stigmal vein a little over a third the length of the marginal, the postmarginal over half the length of marginal. Mandibles 6-dentate.

From one female captured in jungle, February 10, 1914 (A. P. Dodd).

Habitat: Babinda (Cairns district), Queensland.

Type: No. *Hy 2699*, Queensland Museum, Brisbane, the specimen on a tag; head and hind legs on a slide.

ARDALOIDES new genus.

In this genus the axillæ are not advanced.

Type: The following species.

1. ARDALOIDES SIMITHORAX new species. Genotype.

Female:—Length, 1.80 mm.

Dark metallic green, the abdomen black, whitish at distal third of the second segment. Wings with a substigmal blotch. Caudal coxæ concolorous, femora and legs brownish yellow, the hind femora subfuscous, the tibiæ lighter. Midventer of abdomen yellowish white. Thorax polygonally reticulated, the propodeum glabrous, with a distinct, long mediau carina and a lateral sulcus mesad of the small oval spiracle, the propodeum at apex ending in a nose; abdomen shining, with a long petiole, the second segment also long, obconical, depressed, occupying over a third of the surface, the third less than half its length. Scutellum with marginal grooves which join around the apex. Parapsidal furrows short, distinct. Pronotum transverse quadrate. Antennæ 9-jointed with two ring-joints, the club solid, four funicle joints. Pedicel fuscous, short, funicle 1 longer than it and longest of the funicle, the next three joints globular. Club slightly nippled at tip, longer than any of the funicle joints. Mandibles 7-dentate. Hind tibial spurs normal. Postmarginal and stigmal veins long, the former the longer, the marginal somewhat shorter than the submarginal but over twice the length of the stigmal.

The genus is characterised by the 9-jointed antennæ with two ring-joints aud the solid club, also the long petiole.

Male:—Not known.

Described from one female captured by sweeping in jungle, September 12, 1913 (A. P. Dodd).

Habitat: Kuranda, Queensland.

Type: No. *Hy 2700*, Queensland Museum, Brisbane, the specimen on a tag; head and hind legs on a slide.

2. ARDALOIDES 10-DENTATUS new species.

Female:—Differing from the typical form in having 10-dentate mandibles, the blotch on the fore wing subobsolete, the caudal coxæ brown, the scutellum bears a short median sulcus at a little over proximal fourth (in the typical form in center of scutellum a round fovea or puncture, it is a little distad of center and may be accidental). In both species, the lateral half of each side of propodeum is scaly, the rest glabrous. In this species lateral carinæ are certainly absent and true grooves but there is a groove-like depression. In the genotype I could not with certainty make out whether or not it was a true groove but apparently not. In both species the parapsidal furrows curve off some distance before pronotum.

In the genotype the mandibles are pale, dark brown at tip; in this species the mandibles are all dark brown. The scape is pale lemon yellow in both.

Described from one species caught in forest, June 30, 1914.

Habitat: Gordonvale, Queensland.

Type: No. *Hy 2701*, Queensland Museum, Brisbane, the specimen on a tag.

GENUS EUPLECTROPHELINUS Girault.

In the genotype, the propodeum is black mesad out nearly to the lateral carina. A second specimen had the propodeum black only down the median line rather broadly.

PROARDALUS new genus of Girault and A. P. Dodd.

Female:—Similar to *Ardaloides* Girault but nonmetallic and there is only one ring-joint and the petiole of abdomen is shorter, the second segment not depressed and obconic as in *Ardaloides* whose petiole is slender, longer than the hind coxæ and somewhat over thrice longer than its width. The petiole with this genus is not as long as the hind coxæ (*per se*) and not much longer than wide, the second segment convex-hemispherical, occupying somewhat over a fourth of the surface. Otherwise about the same. Similar to *Euplectrophelinus* Girault but there is but the one ring-joint, the propodeum is without a neck and lateral carinæ (but with lateral sulci) and the second abdominal segment is much shorter (about half the surface in the other).

Type: The following species.

1. PROARDALUS NIGRICAPUT new species of Girault and A. P. Dodd

Female:—Length, 1.15 mm.

Shining black, the wings hyaline, the abdomen, legs, scape and pedicel (but darker), yellow-brown, the abdomen margined all round rather broadly with blackish. Grooves of scutellum joining round apex. Thorax reticulated, the lines not raised. Scutellum and propodeum practically without sculpture, polished. Segment 2 of abdomen equal in length to 3 and 4 combined, its caudal margin slightly convexed. Mandibles 6-dentate. Funicle 4 a little the longest, the others subequal, all oval, not much longer than wide. Pedicel about equal to the funicle joints, much shorter than the solid club, which is not of great length.

Described from one female caught by sweeping grass and foliage on edge of jungle, September 20, 1913 (A. P. Dodd).

Habitat: Northern Queensland (Kuranda near Cairns).

Type: No. *Hy 2702,* Queensland Museum, Brisbane, the above specimen on a tag, the head and hind legs on a slide.

TRIBE ELACHERTOIDINI.

The tarsi are 5-jointed, the hind tibial spurs double.

GENUS DIPARELLOMYIA Girault.

The parapsidal furrows are complete. *Antea,* p. 179, line 10, *postmarginal* should read *submarginal.* A female, forest, type locality, August 20, 1914, was rosaceous coppery instead of dark green but otherwise the same. The cross-suture on scutellum is fine, the latter shining, the scaly sculpture visible but faint.

TRIBE EULOPHINI.

GENUS GROTIUSELLA Girault.

The parapsidal furrows are variable, most frequently not reaching the axillæ. *Eulophinusia* is the same as this genus. Antennæ inserted on a level with the ventral end of the eyes. Abdominal segments subequal.

1. GROTIUSELLA CYDIPPE (Girault).

Eulophinusia cydippe (Girault).

Length, 1.12 mm. This species resembles *Elachertonecremnus circumjectus* Girault in some respects, the body similar and the scutellum and axillæ are similarly margined with golden yellow. But there are two slender hind tibial spurs and the mandibles bear less teeth.

The hind margin of the pronotum is yellow also, but otherwise the color is as described. the abdomen brownish coppery. The propodeum is short, the habitus somewhat as in *Zagrammosoma* and *Gyrolasella*. Thorax flat. One ring-joint. Type re-examined.

The *type* was taken on March 3, 1912 and is on a tag, a wing and a caudal leg on a slide.

2. GROTIUSELLA FASCIATIFRONS Girault.

Antea, p. 283, line 5 of the description, *femur* read *tibia*.

3. GROTIUSELLA FACIES new species.

Female:—Length, 1.25 mm.; slender.

Like *fasciatifrons* Girault but the whole of the face dorsad of the antennæ is yellowish white, with a thin metallic green stripe across some distance above the antennæ and a yellowish white one across just below them, the latter abbreviated laterad, not reaching the eyes. Also, the hind tibia is black nearly to tip (just below knees in the genotype), the band just below knees broad and distinct. Scutum distinctly rather finely scaly reticulate, the scutellum very finely sheened, subglazed and metallic blue. The genotype appears to have a similar sculpture. Propodeum with a thin median carina, the spiracle minute. The stigmal vein is a little shorter than in the wing of the genotype. Abdomen conical, longer than the rest of the body. Mandibles 6-dentate (probably the same in the genotype). Distal half of scape black.

From one female captured in forest, January 7, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2703*, Queensland Museum, Brisbane, the specimen on a tag; hind legs and head on a slide.

4. GROTIUSELLA ARGENTIFASCIATA new species.

Female:—Length, about same as the other species.

Characterised by bearing a silvery white stripe across abdomen a little distad of middle, this stripe not quite reaching the lateral margins, distinct but not broad. Legs silvery white, the caudal coxæ concolorous or dark metallic green. Caudal margin of pronotum silvery white. Caudal and lateral margins of scutellum and caudal margin of axillæ, golden yellow, also the vertex except the ocellar area. Occiput all metallic green. Lateral margin of axilla more narrowly golden yellow. Wings hyaline. A line of three spots down face along eye margins, the middle a round spot, the ventral long, joining ventrad the metallic green cheeks and ventral border of face; face dull yellowish white otherwise excepting a cross-stripe of silvery from eye to eye, between the middle and ventral spot of the broken line down the eye margins and some distance above insertion of antennæ or about the middle of the face. Scape white except at apex. Rest of antenna usual. Mandibles 5-dentate. Propodeum with a distinct median carina.

From one female caught in forest, July 9, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2704*, Queensland Museum, Brisbane, the specimen on a tag with type of *facies*.

The species *cavendishi*, *thoreauini* and *facies* have the median carina on propodeum and doubtless the others with the possible exception of the genotype.

5. GROTIUSELLA THOREAUINI new species.

Female:—Length, 1.30 mm. Hind tibial spurs short, unequal.

Dark metallic green, the wings hyaline, the legs white, except the dusky caudal femora centrally, the caudal tibiæ just below knees for half way to apex and middle tibiæ just below knee at proximal fourth. Head pale whitish except occiput and center of vertex broadly. Antennæ yellowish, the scape and pedicel whitish, the pedicel dusky (or metallic?) above. Mandibles with two outer acute longer teeth, then obliquely truncate and with four minute comblike teeth. Body marked with golden yellow as follows:—A rather large spot on each side of meson of neck of pronotum; an oblique line down scutum on each side (distad along mesal margins of the axillæ, the latter cephalad of the scutellum) like parapsidal furrows but constricted at about cephalic fourth; all margins of scutellum except at meson of base; lateral and caudal margins of axillæ, the caudal yellow joining the long oblique streak on scutum at its apex; mesopostscutellum; a stripe on abdomen just out from base, bluntly incised at meson of cephalic margin and at each lateral running more narrowly to base; two cross-stripes distad of this both broadly interrupted along the meson; a broader, complete stripe distad of these and a little distad of middle; a similar stripe next but broadly interrupted at meson and a little shortened laterad; then a complete stripe of same length and still some distance from apex. Propodeum glabrous at meson, with a median carina and no others; scaly laterad. Thorax densely scaly, the pubescence very sparse. Antennal club appareutly 2-jointed but closer scrutiny shows that no articulation is present; ring-joint extremely short; funicle 1 longest, subquadrate, larger thau the globular pedicel, the following joints distinctly wider than long, each widening a little in succession.

Coloured like species of *Gyrolasella* for which I mistook it.

Respectfully dedicated to Henry David Thoreau.

Described from one female taken by sweeping bushes, October 10, 1913 (G. F. Hill).

Habitat: Port Darwin, Northern Territory.

Type: No. *Hy 2705,* Queensland Museum, Brisbane, the female on a tag; head and hiud tibiæ on a slide.

6. GROTIUSELLA PEARSONI new species.

Female:—Length, 1.35 mm.

Very similar to *hyatti* but the cheeks are green and the stripe down the face along the eyes is first interrupted dorsad of middle and for the second time, a little ventrad of middle, some distance dorsad of ventral end of the eye; the legs are wholly lemon yellow, the apex of postscutellum is metallic green rather broadly, the whole of base of scutellum is metallic green; the venter and sides of abdomen are deep golden yellow; moreover, the broken cross-stripes of abdomen are rather spots (counted as stripes, there are but five—the first and last complete stripes, the fourth consisting of two round marginal spots, the third a rather broad stripe interrupted at meson, the second two wider than long marginal spots); first stripe rather broad, incised at meson of cephalic margin. Propodeum glabrous except laterad of spiracle. Otherwise as in *hyatti.*

From one female captured in the same place as *hyatti,* described below, on May 9, 1914.

Habitat: Chindera (Tweed River), New South Wales.

Type: No. *Hy 2706,* Queensland Museum, Brisbane, the specimen on a tag with type of *hyatti,* head and caudal tibiæ on a slide.

Dedicated to Karl Pearson.

7. GROTIUSELLA HYATTI new species.

Female:—Length, 1.15 mm.

Agrees with the description of *thoreauini*, except as follows: The caudal tibiæ dorsad are all black except at tip, the caudal femora are all black and the middle femur is dusky; the face bears a stripe down each side along the eyes, broken just ventrad of middle and again near the end of the eye; this stripe curves around onto the cheek; the scrobes are dark metallic green to vertex; the antennæ are black, proximal half of scape white, its distal half dusky; the mandibles are about 7-dentate; the caudal margin only of pronotum is yellow; other yellow markings the same but base of mesopostscutellum is not yellow (nor so in *thoreauini*), the first stripe of abdomen is narrowly interrupted at meson and the central complete cross-stripe is absent (stripe 4 from base—six stripes in all, seven in the other species; of the six all interrupted at meson except the last); the second stripe (interrupted at meson) is thin; there is a dot of yellow distad of stripe 6, on each side of immediate apex. The propodeum is wholly scaly. Funicle 1 is subequal to the pedicel. Otherwise as in the species named. Compared with type of *thoreauini*.

From one female captured on sand-ridges near coast, forest, May 13, 1914 (A. P. Dodd).

Habitat: Chindera (Tweed River), New South Wales.

Type: No. *Hy 2707*, Queensland Museum, Brisbane, the specimen on a tag; head and caudal tibiæ on a slide.

Dedicated to Alpheus Hyatt.

8. GROTIUSELLA CAVENDISHI new species.

Female:—Length, 1 mm.

Differs from the genotype in that the pronotum is wholly concolorous, the yellow bordering of the scutellum encroaches upon the cephalic margin but is separated rather broadly at the meson, the fore wings bear a distinct substigmal spot and the ventral third of the face is bright lemon yellow, crossed by two metallic green stripes, the ventral one through the antennal insertions. Also the funicle joints are all distinctly wider than long, the flagellum subcompressed and the mandibles are about 10-dentate. Femora black, the tibiæ so just below the knees. Antennæ black except proximal half of the short scape. Vertex with a yellow line across cephalic margin, the line interrupted at the meson. Facial margins of eyes more or less yellowish. Caudal tibiæ black except at tip.

From one female captured sweeping foliage and grass in a swamp, May 14, 1914 (A. P. Dodd).

Habitat: Chindera (Tweed River), New South Wales.

Type: No. *Hy 2708*, Queensland Museum, Brisbane, the specimen on a tag; head and caudal tibiæ on a slide.

NOTANISOMORPHELLA new genus.

1. NOTANISOMORPHELLA PROSERPINENSIS (Girault). Genotype.

Asympiesiella proserpinensis; Notanisomorphella australiensis, nomen nudum.

Antea, p. 287. Length, 2.10 mm. Second club joint terminating in a nipple which bears a short stout spine at apex. Pedicel shorter than any of the funicle joints. First club joint as long as the distal funicle joint. Scape long, slender. The original female was taken at Gordonvale, jungle pocket, May 15, 1913 (A. P. Dodd). A second female of the same date at Kuranda. The lateral line of fovea leads directly from the spiracle. Type re-examined.[26]

[26] No lateral carina on propodeum.

GENUS NECREMNOIDES Girault.

The scutellum bears two grooved lines. Parapsidal furrows delicate, not quite complete, leading off cephalad. Type of genotype re-examined.

1. NECREMNOIDES FULVIPROPODEUM new species.

Female:—Length, 1.15 mm.

Like the genotype but the abdomen with a short petiole and the marginal vein is somewhat longer; otherwise very similar in form and so forth.

Dark metallic green, the propodeum, postscutellum and abdominal petiole chestnut brown, the abdomen suffused with brownish, especially ventrad. Wings hyaline. Propodeal spiracle small, perfectly round, the lateral carina slender. All of each leg light yellow, also the scape, the rest of antenna blackish; pedicel not quite as long as funicle 4 which is somewhat the shortest joint of the funicle; antenna nearly as in the genotype. Mandibles 4-dentate.

Male:—Not known.

Described from one female captured by sweeping in forest, foothills, July 9, 1913 (A.P.D.).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 3463*, Queenslaud Museum, Brisbane, the above specimen on a tag, the head and hind tibiæ on a slide.

The antennæ in this genus apparently bear a 3-jointed club but the small conical third joint (which ends iu a short, stout spiue) does not appear to be articulated.

Types of *tricarinatus* re-examined.

2. NECREMNOIDES TRICARINATUS MANDIBULARIS new variety.

Similar to the typical form but the abdomen is brownish yellow at base ventrad, one mandible 5-dentate as iu the typical form but the other bears only two large teeth laterad and an inner truncation in this new variety, in the typical form three large teeth laterad and an inner truncation. In *fulvipropodeum* both mandibles are 4-dentate, the teeth gradually smaller mesad.

From one female, June 26, 1914, caught in forest.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2709*, Queensland Museum, Brisbane, the specimen on a tag.

2. NECREMNOIDES FLAVIVENTRIS Girault.

Belongs to *Notanisomorphomyia* which see.

GENUS NOTANISOMORPHOMYIA Girault.

1. NOTANISOMORPHOMYIA FLAVIVENTRIS (Girault).

Necremnoides flaviventris Girault.

A secoud female was captured by sweeping grass in forest, type locality, April 6, 1914. The antennæ are 11-jointed, the club 2-jointed, a third joint indicated by a very small nipple-like projection ending in a spur. Lateral carina of propodeum narrow. Propodeal spiracle round, very minute. Antennæ concolorous with the legs. Abdomen dorsad flat, with a short petiole. Lateral carina of propodeum running from meso-caudal edge of spiracle and there is more or less of a sulcus just laterad of the carina and thus directly from the spiracle. The

broken marginal stripe of abdomen extends not quite to tip. Funicle 1 a little over twice longer than wide, 2 and 3 each a little shorter than 1, 4 ovate, distinctly shorter than 1. Antennæ inserted somewhat below the middle of the face, the latter smoother ventrad of antennæ. Club 1 the longer. Postmarginal vein somewhat longer than the stigmal. Scutum with some silvery pubescence. Type re-examined.

2. NOTANISOMORPHOMYIA PERSIMILIS new species of A. P. Dodd and Girault.

Female:—Length, 1.80 mm.

Very similar to the genotype but dark metallic purplish, the legs golden yellow; scutum and scutellum with rather weaker reticulation, the reticulation cephalad on the scutum (in *albicoxa* Girault the scutum and scutellum are wholly densely reticulated); wings stained yellowish; cross-carina of propodeum joining the median carina at cephalic fourth (in the middle in *albicoxa*); mandibles with 6 teeth.

From one female captured by sweeping grass and foliage on edge of jungle, December 19, 1912 (A. P. Dodd).

Habitat: Kuranda, Queensland.

Type: No. *Hy 2710,* Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

The reticulation is similar in both species (coarse, raised lines) but in *persimilis* somewhat less prominent and gradually disappears cephalad on the scutum. (A. A. Girault.)

GENUS ALOPHOMORPHA Girault.

Synonym: *Diaulomyia* Girault.[27]

1. ALOPHOMORPHA PULCHRA Girault.

Length, 2 mm. In the original description, line 6, *scutellum* should read *scutum*. Head sculptured like the axillæ. Scape white, rest of antenna black. Abdomen sculptured like the propodeum (except segment 2). The *type* was captured May 26, 1913 and is on a tag, an antenna and hind leg on a slide.

Segment 2 of abdomen a sixth or less the length of the abdomen, a little the longest; stigmal vein a third the length of the marginal. The scutellum is sculptured as is usual for the body sculpture in the Tetrastichini. A large fovea at caudal margin of propodeum, caudo-mesad of spiracle. Caudal femur compressed. Type re-examined.

EULOPHOMORPHA new genus of A. P. Dodd.

Female:—Head, cephalic aspect, not much wider than long; viewed from above no wider than thorax. Mandibles with about nine or ten small teeth; antennæ inserted near the mouth, 10-jointed, with two ring, three funicle and three club joints; funicle joints not compressed; club wider than funicle. Marginal vein as long as submarginal, many times longer than the short stigmal, the latter as long as the postmarginal. Posterior tibiæ with two rather long apical spurs. Pronotum short, scutum rather long; axillæ much advanced, scutellum simple; propodeum with a distinct median carina, no lateral carinæ but there are rather delicate spiracular sulci and caudo-laterad of the spiracle there are some blackish bristles. Abdomen sessile, convex above, straight beneath, no longer than the head and thorax united and no wider than thorax, second segment the longest, occupying scarcely a third of the surface; ovipositor somewhat exserted.

[27] This is not true. *Diaulomyia* is characterized by the compressed funicle and club but otherwise closely resembles *Alophomorphella asperitergum*. The smoky blotch on the fore wing of the genotype is separated a little from the marginal vein. A female of the genotype at Tweed Heads (Tweed River), New South Wales, 500 feet, May 3, 1914 (A. P. Dodd).

1. EULOPHOMORPHA FLAVICORNIS new species of A. P. Dodd. Genotype.

Female:—Length, 1.75 mm.

Dark metallic green, the scutum and scutellum brilliant coppery, the legs, antennæ and venation, wholly clear lemon yellow, the wings hyaline. Pedicel not much longer than funicle 1 which is not twice as long as wide, 2 and 3 shortening, 3 subquadrate; club not twice as long as wide, first and second club joints of equal length, the third smaller; first ring-joint small. Thorax, including propodeum, finely scaly; second abdominal segment smooth, the rest very finely scaly.

From one female taken by sweeping in jungle, December 28, 1913 (A. P. Dodd).

Habitat: Harvey's Creek (Cairns), Queensland.

Type: No. *Hy 2711*, Queensland Museum, Brisbane, the specimen on a tag; head and a hind leg on a slide.

PARDIAULOMYIA new genus of Girault and A. P. Dodd.

Female:—Like *Eulophinusia* Girault in all structures excepting that the antennæ bear two ring-joints and the habitus is different being like that of the Entedonini, the very short abdominal petiole heightening the effect. Parapsidal furrows only slightly indicated cephalad. Propodeum of usual length, with a thin median carina, a slight sulcus on each side of it and a sulcus in the place of the lateral carina. Marginal and submarginal veins about equal, the stigmal somewhat less than a third the length of the marginal and somewhat shorter than the postmarginal. Segment 2 of abdomen distinctly the longest, occupying about a fourth of the surface. Hind tibial spurs slender, much unequal. Mandibles 7- to 8-dentate. Thorax convex.

Male:—Not known.

Type: The following species.

1. PARDIAULOMYIA SPADICEIPES new species.

Female:—Length, 1.05 mm.

Aeneous black, the wings hyaline, the second abdominal segment and the propodeum metallic blue, the legs, except the coxæ proximad, yellow-brown, also the antennæ, the scape and pedicel whitish. Thorax except propodeum, coarsely polygonally reticulated, the lines raised. Pronotum a little longer than transverse, not especially long. Antennæ inserted on a line with the ventral ends of the eyes, the scape long and slender, the pedicel about equal to funicle 1 which is longest by a little, longer than wide, funicle 4 subquadrate; club much longer than any of the preceding joints except the scape, solid, without a prominent terminal nipple. Antennæ cylindrical.

Described from two females taken by sweeping jungle growth along a forest streamlet, June 10 and 14, 1913 (A.P.D.).

Habitat: Gordonvale (Cairns), Queensland.

Types: No. *Hy 3464*, Queensland Museum, Brisbane, the foregoing specimens on a tag, the head and hind tibiæ on a slide.

DIAULOMORPHELLA new species.

Female:—Like *Diaulomorpha* Ashmead but apparently differing in having the head different, it being no longer than wide and the stigmal vein is much shorter, it being about a fourth the length of the marginal and plainly shorter than the postmarginal; also, the post-scutellum is distinctly less than half the length of the scutellum. Antennæ inserted below the middle of the face, 9-jointed, one ring, two club joints. Mandibles 9-dentate. Propodeum reticulated, with a median carina and no others, the carina with a narrow sulcus on each side of it. Abdomen with a short petiole, conic-ovate, the second segment not much longer than the others. An impression just mesad of spiracle, cephalic margin of propodeum. Axillæ much

advanced, the parapsidal furrows very short, cephalad only. Scutellum with two delicate grooved lines. Marginal veiu a little shorter than the submarginal. Pronotum transverse-linear (dorsal aspeet).

Male:—Not known.

Type: The following species.

1. DIAULOMORPHELLA CYANEIPURPUREA new species.

Female:—Length, 1.55 mm.

Dark metallic purple-blue, the wings hyaline, the petiole, tip of scape and legs except coxæ, distal half of caudal femur above, hind tibiæ outwardly along proximal half and front femora beneath, which are purplish; hind coxa white toward tip. Mesoscutum densely reticulated, the lines raised; the scutellum finer, with the sculpture of *Tetrastichus*. Grooves of scutellum delicate. Reticulation of propodeum not raised, the regiou shiny. Pedicel very short, like a cup; funicle 1 longest, 4 shortest yet plainly longer than wide, larger and a little longer than either of the club joints, the distal of the two latter ending in a distinct seta. Flagellum dusky yellowish brown; proximal half of pedicel purplish.

Male:—Not known.

Deserihed from one female captured by sweeping in jungle, May 19, 1913 (A.P.D.).

Habitat: Kuranda, Queensland.

Type: No. *Hy 2712,* Queensland Museum, Brisbane, the foregoing specimen on a tag, the head and hind legs on a slide.

PARDIAULOMELLA new genus.

Differs from *Diaulomella* in bearing two ring-joints. In this genus, the axillæ are much advanced; form slender; casually the club appears 2-jointed.

1. PARDIAULOMELLA CONSONUS new speeies. Genotype.

Female:—Length, 2.65 mm.

Remarkably like *Opheliminus grotiusi* but the parapsidal furrows aro less evident near the advanced axillæ, the triangular dorsal yellow spot on abdomen is directly at base, no dark metallic coloration intervening, the mandibles are 7-dentate and the propodeum has a different sculpture, reticulate-punctate, the punctures smaller than those of the rest of the thorax (in *grotiusi,* the thorax is similarly reticulate-punctate yet the propodeum is only reticulated, shining and scaly); in this species the propodeum is longer, the median carina less raised, fading out caudad. The stigmal vein also is longer, less plainly only half the length of the postmarginal while the fore wings are slightly embrowned throughout. The antennæ are similar or nearly.

Male:—Not known.

From one female captured in September (F. P. Dodd).

Habitat: Kuranda, Queensland.

Type: No. *Hy 2715,* Queensland Museum, Brisbane, the female on a tag; hind legs and head on a slide.

Genus ASYMPIESIELLA Girault.

The antennæ bear two ring-joints.

1. ASYMPIESIELLA NELSONENSIS (Girault).

Length, 5.10 mm.; male, 2.85 mm. Associated with *Mestocharoideus cyaneus* in a gall on a forest bush. The types were reared November 30, 1912 and consist of two pairs on tags (four pins) and a head on a slide.

A female, forest, type locality, May 27, 1914 and another by sweeping forest on sand-ridges near coast, Chindera, New South Wales, May 8, 1914 (A. P. Dodd). The scape is white along proximal two thirds; mandibles 6-dentate. Coxæ metallic on proximal half, long; the general color may be æneous green. The median carina of propodeum extends not quite half way to apex from base.

A. ASYMPIESIELLA NELSONENSIS GRACILIS new variety.

Female:—Length, 3 mm.

Exactly similar to the typical form, but very much smaller and dark metallic green; the distal funicle joint is shorter, being only slightly longer than wide, while the proximal club joint is barely longer than the distal (in the typical forms somewhat longer). The mandibles 6-dentate in both forms, the two outer teeth largest, subequal. In both the coxæ are concolorous at base, the thorax reticulate-punctate, the propodeum showing reticulation delicately, the postscutellum more distinctly. Antennæ with two ring-joints, the first short; first three funicle joints distinctly compressed. Compared with types of typical form.

From one female captured by sweeping among bushes, October 10, 1914 (G. F. Hill).

Habitat: Port Darwin, Northern Territory.

Type: No. *Hy 2713*, Queensland Museum, Brisbane, the female on a tag.

2. ASYMPIESIELLA LONGIVENTRIS new species.

Pseudopheliminus and *Pseudophelimus longiventris, nomina nuda,* in *antea,* pp. 286-287, 291.

Differs from *nelsonensis* in being more slender, the mandibles 7-dentate, the scape wholly white. Length, 3 mm. The type was taken April 13. Compared with type of *nelsonensis.*

3. ASYMPIESIELLA SUPERBUS new species.

Female:—Length, 2.70 mm.

Vertex of head thin. Antennæ inserted below middle of face, 10-jointed, two ring-joints, four funicle joints, two club joints. Marginal vein long, as long as submarginal, stigmal vein moderately long, postmarginal two and a half times the length of stigmal, scarcely half the length of the marginal. Scutum longer than pronotum, as long as wide; axillæ advanced; scutellum simple. Propodeum rugulose, without carinæ. Abdomen sessile, conic-ovate, no longer than head and thorax united, first segment longest, equal to nearly a third of surface. The abdomen is shorter than in the genotype. Bright metallic green, the thorax coppery; legs (except apical joint of tarsi) and basal half of antennal scape very pale straw yellow; rest of antennæ black. Wings hyaline. Scutum and scutellum with dense, scaly reticulation, the reticulation in raised lines. Pedicel short, scarcely longer than wide, funicle 1 fully three times as long as pedicel, second and third funicle joints subequal, each a fourth shorter than 1, 4 somewhat shorter than 3, club a little longer than preceding joint.

From two females caught by sweeping forest, August 5, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2714*, Queensland Museum, Brisbane, a female on a tag; head and a hind leg on a slide.

Antea, p. 288, line 20, *speeimen* should be plural.

TRIBE HEMIPTARSENINI.

GENUS NECREMNOMYIA Girault.

The scutellum is simple, the form slender, the axillæ much advanced. Type of genotype re-examined.

1. NECREMNOMYIA VARISCUTUM new species.

Female:—Differs from *saintpierrei* in the following characters only: The femora are dusky only about their middles, all white in cephalic legs; the funicle joints are all longer than wide, not subglobular; and the raised polygonal sculpture of the scutum is finer and disappears broadly along the meson and cephalad, the surface opaque. In the genotype, this sculpture is uniform and distinct. In both species the postmarginal vein is a little longer than the short stigmal. Casually, the club appears 2-jointed.

From one female taken in jungle, November, 1913 (A. P. Dodd).

Habitat: Harvey's Creek (Cairns), Queensland.

Type: No. *Hy 2716*, Queensland Museum, Brisbane, the female on a tag.

GENUS SYMPIESONECREMNUS Girault.

This genus is exactly similar to *Neocremnomyia* except that the form is more robust, the median carina of propodeum paired, the caudal tibial spur stout, the mandibles with several more teeth and the flagellum is subcompressed, the distal two funicle joints with short petioles. The venation is identical. Genotype re-examined (type).

1. SYMPIESONECREMNUS ÆNELLA new species of A. P. Dodd.

Female:—Length, 1.40 mm.

Like *boasi* Girault but smaller, the sculpture finer, the propodeum smooth and with a single median carina; abdomen slenderer; tibiæ, tarsi and posterior femora yellow, the first two pairs of femora brownish; scape and pedicel fuscous, the flagellum dark yellow-brown, funicle joints subequal; otherwise the same or nearly.

From one female taken sweeping jungle along a road, February 23, 1912 (A.A.G.).

Habitat: Rossville, Cooktown.

Type: No. *Hy 2717*, Queensland Museum, Brisbane, the specimen on a tag; head and hind legs on a slide.

The club appears 2-jointed but the transverse constriction at about distal third is not articulated (A. A. Girault).

GENUS ASCOTOLINX Girault.

Removed from the Elachertini. Scutellum with no cross-groove before apex but the lateral grooves join around the apical margin. The axillæ are advanced, the parapsidal furrows only cephalad, obscure. Carinæ of propodeum very distinct, the lateral ones broadly curved. Pronotum transverse quadrate. Postmarginal and stigmal veins rather short, the marginal over five times the length of stigmal. Axillæ advanced a third the way up the scutum. Type of genotype re-examined.

1. ASCOTOLINX FUNERALIS Girault.

Length, 1.63 mm. Abdominal segments except 2, finely scaly except caudad on each. Club with a terminal seta. Scape slender. The *type* was captured May 8, 1913 and is on a tag, the head and cephalic legs on a slide.

PRONECREMNUS new genus of Girault and A. P. Dodd.

Female:—Antennæ 11-jointed, two ring-joints, four funicle joints, three club joints. Mandibles with two large and about five small teeth. Scutellum without grooves. Parapsidal furrows only indicated anteriorly. Propodeum not short, smooth, with a distinct median carina, the lateral carinæ absent. Abdomen sessile, conic-ovate, rather long and pointed. Fore wings without regular rows of discal cilia. Submarginal vein distinctly broken; marginal vein very long, one third longer than submarginal, stigmal vein very short, postmarginal two and a-half times the length of stigmal. A genus closely resembling *Secodella* Girault of the Omphalini.

1. PRONECREMNUS SPECIOSUS new species of Girault and A. P. Dodd. Genotype.

Female:—Length, 1.50 mm.

Dark metallic blue; the coxæ concolorous, trochanters and tibiæ dark brownish black, the tarsi (except apical joint which is dark-brownish black) pale straw yellow. Antennæ wholly black. Scutum and scutellum with polygonal reticulation, the reticulation in raised lines. Pedicel longer than wide, distinctly shorter and narrower than funicle 1, which is somewhat longer than 2, 2-4 as wide as long. Club a little longer than funicle 1; first and second joints wider than long. Wings hyaline.

From one female taken sweeping jungle, May 19, 1913 (A. P. Dodd).

Habitat: Kuranda, Queensland.

Type: No. *Hy 2718*, Queensland Museum, Brisbane, the female on a tag; head and posterior legs on a slide.

The table of genera, *antea*, p. 294, should be altered to conform with the foregoing; line 2, *with* should read *without*.

HETREULOPHINI new tribe.

Differs from the Hemiptarsenini in having all tarsi 5-jointed and tridentate mandibles.

HETREULOPHUS new genus.

Female:—Head (cephalic aspect) a little longer than wide, the antennæ inserted on a level with the eyes, 11-jointed with one distinct ring-joint, the club solid. Parapsidal furrows represented by the usual constriction of the scutum cephalad as in many of the Eulophini. Axillæ triangular, advanced wholly (or nearly) cephalad of the scutellum, the latter squarely truncate behind, the postscutellum continuous with its outline and forming a rounded apex (the scutellum thus appears to have a distinct cross-suture before apex). Scutellum with two grooved lines, one on each side rather far laterad but in the dorsal aspect. Propodeum normal, with a median carina and no others. Venation normal, the marginal vein somewhat shorter than the submarginal, the stigmal of moderate length, with a slender, distinct neck, about a third the length of the marginal, the postmarginal elongate, twice the length of the stigmal. Abdomen much as in the eupelmine genus *Anastatus*, the ovipositor extruded for a short distance and turned up. Abdomen subsessile, widening distad. Habitus of the Ophelinini.

1. HETREULOPHUS BIFASCIATIFRONS new species. Genotype.

Female:—Length, 1.30 mm. Ovipositor about a sixth the length of the abdomen, its proximal two thirds white, rest black.

Orange yellow, the abdomen pale whitish yellow, dorsad washed with purple except proximad; pronotum washed with purple. Face with two interrupted metallic purple lines across a little above the antennæ, the lines separated for some distance and parallel; dorsal head lightly purplish, lemon yellow ventrad. Propodeum and axillæ washed with purplish, also more lightly, cephalic scutum. Legs orange yellowish, the cephalic and intermediate tibiæ purple, the hind coxa also but white toward and at tip. Hind knees white, the hind tibiæ purple dorsad. Antennæ yellowish brown, the last three joints jet black; scape long and slender; pedicel longer than any of the funicle joints; ring-joint a little wider than long; first three funicle joints distinctly narrower than the distal three, 1 longest, about twice longer than its width but really not much longer than 7 which is a little longer than wide and subequal to the three joints proximad of it (taken separately). Club without a terminal nipple; not quite as long as the united lengths of the three preceding joints. Hind tibial spur normal, small, the hind femur compressed. Scutum rather coarsely scaly; rest of thorax more finely so, the scutellum densely, finely lineolated, bearing four large isolated, black setæ. Fore wings with marginal cilia and a small clump of short, stiff black setæ upon the apex of the submarginal vein, embrowned from a crescentic cross-stripe of deeper color a little proximad of the clump, the infuscation broken—across extreme apex by hyalininess; against the submarginal vein by a round hyaline spot adjoining which proximad is a somewhat smaller fuscous spot (a similar spot opposite at caudal margin) and by a longer than wide hyaline area under the marginal vein. Discal cilia present on the hyaline areas as on the infuscated region. Legs simple.

From one female taken in jungle, February 10, 1914 (A. P. Dodd).

Habitat: Babinda, Queensland.

Type: No. *Hy 2719*, Queensland Museum, Brisbane, the specimen on a tag; head and hind legs on a slide.

In the table of subfamilies, *antea*, pp. 294-295, omit the Aphelinini; line 9, insert *usually* before *4-jointed*. In the Elachertinæ, the axillæ are frequently not advanced; p. 295, line 4, omit the word *incomplete*; line 8, omit the first two words; line 9, omit words 2-8; lines 10 and 12, *five* should read *none*; line 12, omit all words in parentheses following the semicolon; line 16 omit the interrogation point.

All the members of this family as soon as obtained should be killed by immersion in alcohol and preserved in that medium until the specimens are ready for study. The head should be mounted separately in balsam after being removed and divided into two by pressing a needle or ordinary insect-pin along the face between the antennal bulbs. In this way, assurance of seeing the ring-joints, which must be pressed out, is made. Shrivelling is to be avoided. Accuracy is an essential in descriptions.

AUSTRALIAN HYMENOPTERA CHALCIDOIDEA—V.

SUPPLEMENT.

By A. A. Girault.

The following additions to the genera and species. Magnification as formerly.

Family PERILAMPIDÆ.

Genus PERILAMPUS Latreille.

The metallic tints vary considerably, blue often becoming green or purple and so on. One ring-joint.

1. PERILAMPUS CAIRNSENSIS Giranlt.

A female of this species captured at Cairns, Queensland, was bright metallic green instead of dark æneous like the type. Compared with type. Length, 4.50 mm. Type captured November 1, 1911 and is on a tag.

2. PERILAMPUS CAPENSIS Girault.

The parapsides are uniformly punctured as in *cairnsensis* Girault. Length, 2.80 mm. Type on a tag and was captured in January.

3. PERILAMPUS SPINOSUS new species of A. P. Dodd and Girault.

Female:—Length, 3 mm.

Dark, dull æneous green, the coxæ and femora concolorous, the tibiæ and tarsi golden yellow, the scape black, rest of antennæ dark brown. Wings hyaline, the venation dark brown, the postmarginal vein twice as long as the stigmal and scarcely more than half as long as marginal. At least one mandible tridentate. Funicle joints all somewhat wider than long, the first longest, a little shorter than the pedicel. Face striate, the vertex finely reticulate, the lines not raised. Sentum and scutellum umbilicately punctate, the parapsides cephalad of the middle smooth. Scutellum at apex with a large, semi-erect plate, this appearing from the side, as a semi-erect spine. Second segment of abdomen smooth, the other segments fine scaly reticulate, with scattered punctures at the caudal margins, the punctures setigerous. Propodeum with a median carina.

From one female taken in jungle, February 5, 1914 (A. P. Dodd).

Habitat: Babinda, North Queensland.

Type: No. *Hy 2747,* Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

4. PERILAMPUS AUSTRALIS new species.

Male:—Length, 3.25 mm.

Agreeing with *tasmaniensis* Girault but the sculpture of the abdomen is very dense, more so than with *cairnsensis,* the abdomen of both being glazed, the sculpture consisting of very dense pin-punctures with scattered, larger pits. First tibiæ brownish laterad, the abdomen

green. Sculpture of abdomen distributed as in *cairnsensis*, the third dorsal segment sculptured across proximal half. Club with an apparent fourth joint near tip. Funicle joints wider than long, the first more or less subquadrate. Parapsides uniformly punctate. Head striate. At least one mandible 3-dentate.

Female:—Not known.

From three males labelled "42. From Pamong, S. Austr. 8-3-12. S. W. Fulton"; "43. From Rirney, S. Austr. S. W. Fulton"; and "44. From Pamong, S. Austr. S. W. Fulton." All minutien-mounted.

Habitat: South Australia (Pamong?).

Type: In the National Museum, Melbourne, the specimen labelled "44" with a slide bearing the head.

5. PERILAMPUS LEVIFACIES new species (Girault and A. P. Dodd).

Male:—Length, 2.50 mm.

Similar to *queenslandensis* but the ocelli are nearly in a straight line (distinctly disposed in a triangle in *queenslandensis*), the vertex caudad of the ocelli is transversely striated (only the occiput in the other species, the sculpture not crossing the occipital margin), the size is much larger, the inner margin of the parapside more broadly glabrous. Propodeum with a pair of foveate lines down the meson, the foveæ large, followed laterad, centrally, by a large, smooth, reticulated area. The median foveate lines are separated by a sharp carina and a sharp, curved carina bounds the caudal margin of the smooth area (same in *queenslandensis* but the smooth area is smaller, its reticulation faint). The species *cairnsensis* is much stouter, its head is striate, the abdomen minutely, deeply punctured and the metallic tibiæ suffused more or less with brownish and the mesal margin of each parapside is punctured like the rest of the mesothorax. The species is separated from *queenslandensis* mainly on the difference in the position of the ocelli.

Female:—Not known.

Described from one male captured by Mr. F. P. Dodd in October.

Habitat: Kuranda, Queensland.

Type: No. *Hy 2748*, Queensland Museum, Brisbane, the above specimen on a tag.

6. PERILAMPUS BRISBANENSIS new species.

Female:—Length, 3 mm.

This species may be distinguished at once because it bears a short, obtuse tooth-like spine from the center of scutum. Similar to *queenslandensis* but the ocelli are in a straight line, the face bears scattered pin-punctures, especially ventro-mesad of the eyes (in the other species few and very minute there, less conspicuous), from the cephalic ocellus there runs to the occipital margin a sort of sulcus (rather a depression) and on each side of this there are a few wrinkles. Also in general coloration, the body being deep Prussian blue, the abdomen green distad, the antenna light reddish yellow (not very dark brown as in the other species), the head, scape and pedicel bronze. The abdomen bears fine, faint pin-punctures along the cephalic margin of segment 3 and the distal third of segment 2 as seen from caudal aspect (in *queenslandensis* the second segment is smooth from caudal aspect); segment 3 is absent. The smooth area on the propodeum (in reality, finely scaly) on each side of the median carina is larger and has a much less pronounced fovea just beside the median carina. The stigmal vein is a little shorter in relation to the marginal. Differs from *levifacies* in the same particulars excepting the characteristics of that species. The male type of *levifacies* has only two segments on the

abdomen. The punctures on the scutum in *brisbanensis* are finer than those on the other two species. In all of them, the cephalic ocellus is within the scrobicular cavity.

Male:—Not known.

From two females taken January 17, 1912 and January 27, 1912 (H. Hacker).

Habitat: Brisbane, Queensland.

Types: No. *Hy 2749,* Queensland Museum, Brisbane, the specimens on a tag.

7. PERILAMPUS AQUILONARIS new species.

Male:—Length, 1.50 mm.

Agrees with Walker's *salcius* but the head and abdomen are dark blue and most probably not that species; tibiæ yellowish brown, tarsi yellow; femora concolorous; thorax æneous green. Fore wings slightly stained throughout. Scape metallic green, also the pedicel; rest of antenna rich brown; funicle 1 subquadrate, 6 somewhat wider than long. Head smooth but with conspicuous short pubescence. Axillæ with only the extreme mesal angle punctate (usually somewhat more in the other species), the rest scaly and with a lateral aspect. Abdomen smooth. Postmarginal vein twice the length of the stigmal or nearly, subequal to the marginal. Propodeum with a median carina with foveæ down each side of it, the first ones large, followed laterad by smaller ones, the fourth transverse, then two with others following laterad bounding the large impunctate area on each side of meson which is scaly, its edges just within the circle of bounding foveæ and carinate.

Female:—Not known.

Described from one male taken in forest, November 10, 1913 (G. F. Hill).

Habitat: Port Darwin, Northern Territory.

Type: No. *Hy 2750,* Queensland Museum, Brisbane, the specimen on a tag.

8. PERILAMPUS RELIQUUS new species.

Female:—Length, 2.75 mm.

Æneous green, the wings hyaline; head, abdomen, coxæ and femora very dark blue-black. Head smooth, also abdomen. Occiput finely, circularly striate. Caudal aspect, obscure pin-punctures on abdomen dorso-laterad mesad of margins, this aspect consisting of but two segments, the second or distal very small (really segments 2 and 3).

Differs from *queenslandensis* in that the tibiæ are not dark metallic but reddish brown, washed along the middle dorsad with dark metallic green; the antennæ are not wholly dark but the distal three funicle joints reddish brown ventrad, also base of club; the body is more robust, the abdomen dark green, the scutum coppery. Differs from *levifacies* in that the ocelli are more distinctly in a triangle, the tibiæ are not dark metallic, the thorax is dark metallic green. From *aquilonaris* in that the venation is dark, the flagellum mostly so, the upper face bare or nearly, the tibiæ metallic dorsad centrally. All four species have the disk of parapsides glabrous. Funicle 1 slightly shorter than the pedicel, slightly wider than long, the others slightly shortening in succession distad.

From one female captured by sweeping swamp in forest, May 14, 1914 (A. P. Dodd).

Habitat: Chindera (Tweed River), New South Wales.

Type: No. *Hy 2751,* Queensland Museum, Brisbane, the specimen on a tag; antennæ on a slide.

The species *tasmaniensis* measures 2.50 mm.; *australiensis,* 3.25 mm.; *mittagongensis,* 1.85 mm. The "fiery red spots" on *tasmanicus* Cameron are not red but merely highly metallic spots which would vary.[1]

[1] A. P. Dodd.

GENUS EPIPERILAMPUS Girault.

1. EPIPERILAMPUS ATER new species.

Female:—Length, 2.10 mm. Robust, abdomen stout, rounded.

Wholly shining black, the wings hyaline but with a slight brownish stain, rounded, just under the bend of the submarginal vein. Tarsi paler. Funicle 1 subquadrate, longest, 5 and 6 widest, all after 1 wider than long; club wider than the funicle which widens distad. Mandibles bidentate. Pedicel longer than any of the funicle joints. Stigmal and postmarginal veins subequal, each somewhat shorter than the marginal. Hind tibial spurs double. Marginal fringes of fore wing inconspicuous but present. Scutum with scattered thimble punctures. Venation distad of submarginal vein pale. Differs from *Neoperilampus niger* Girault and Dodd, besides the generic character, in bearing the punctures on the scutum, in having the postmarginal vein shorter, the tibiæ concolorous, the obscure spot on the fore wing, the first funicle joint shorter, also the pedicel and in having the colorless distal part of the venation.

In *Neoperilampus niger*, with which I have compared this species (types), funicle 1 is longer than the pedicel, the ring-joints normal, not very transverse.

Sometimes the cheeks and fore femora are reddish brown; nearly always, the meson of face ventrad of the antennæ. Sides of pronotum more or less orange, also sides of scutum.

Male:—Not known.

Described from three females reared from fleshy galls on young acacia or wattles, near edge of jungle, January 15, 1914 (A. P. Dodd). The species inhabits large cells in each gall.

Habitat: Gordonvale (Cairns), Queensland.

Types: No. *Hy 2752*, Queensland Museum, Brisbane, three females on a tag; fragments of three heads and two hind legs on a slide.

GENUS PERILAMPOIDES Girault.

1. PERILAMPOIDES FLAVITHORAX new species.

Female:—Length, 2.75 mm.

Honey yellow, the abdomen brown except across immediate base, sometimes lighter at tip. Head brown, the antennæ and legs honey yellow. Fore wings hyaline but with a rather broad yellowish brown stripe across it from about the distal third of the submarginal vein. Postmarginal and stigmal veins subequal, slender, a little longer than the marginal. Scutellum with a more or less obscure dusky spot near meson on each side at about distal third. Last joint of funicle abruptly enlarged, a little longer than wide, somewhat larger than the pedicel, over twice the length of funicle 4, the other funicle joints all plainly wider than long. Club joints large. Axillæ nearly or quite meeting at meson. Mandibles large, bidentate. Thorax finely reticulated-scaly.

Male:—Not known.

Described from about fifty females reared from pointed galls on gum in November.

Habitat: Melbourne, Victoria.

Types: In the National Museum, Melbourne, three of the above specimens on a tag, a head on a slide.

2. PERILAMPOIDES PARTICOLOR new species.

Female:—Length, 3 mm.

Blue-black; scutum, parapsides, base of abdomen narrowly, axillæ except centrally, apex and cephalo-lateral angles of scutellum, orange yellow; also the legs (except coxæ) and the sides of thorax (more or less). Postmarginal vein as long as the somewhat thickened marginal, distinctly longer than the stigmal. Axillæ somewhat closer together, nearly meeting inwardly.

Fore wings with a black stripe across them at the bend of the submarginal vein. Scape compressed; funicle 2 much wider than long, widest and shortest, 1 narrower than it but distinctly wider than the ring-joint which is subquadrate. Funicle 6 largest, larger than the pedicel, subquadrate, funicle 4 wider than long. Club as long as the scape. Mandibles bidentate, the second tooth broad. Face obscurely reddish centrally.

Male:—Not known.

Described from six females on a card in the collections of the National Museum of Victoria, Melbourne, labelled "24 and 25, 06-9-11, nr. Melbourne, Lindley Park, Mr. Strickland, E. 11-11-06—galls."

Habitat: Melbourne, Victoria.

Types: In the National Museum, Melbourne, two of the above specimens on a card.

CŒLOCYBOMYIA new genus.

Differs from *Cœlocybella* Girault in having the antennæ inserted below the middle of the face, on the clypeus or nearly, and they are stouter, more clavate, the three ring-joints more graduate into the funicle. Also the axillæ are rather widely separated, not extending mesad of the caudal ends of the parapsidal furrows as in the other genus. The postmarginal vein is somewhat longer than the marginal, subequal to the slender stigmal. Mandibles trideutate. Scutellum flat, not convexed and projecting above a declivous propodeum as in *Cœlocybella* but plane with the plane propodeum and with a narrow sclerite between it and the postscutellum. Segment 2 of abdomen occupying about a fifth of the surface. Caudal tibiæ with two spurs.

1. CŒLOCYBOMYIA SEXFASCIATA new species. Female. Genotype.

Length, 2.20 mm. Orange yellow; pronotum, sclerite just caudad of scutellum, postscutellum and propodeum, pale lemon yellow. Wings hyaline; face of pronotum, sutures of thoracic dorsum, portions of the propodeum some distance laterad of the meson and six conspicuous stripes across abdomen from base to apex, black. Venation pale. Antennæ and legs yellow, the scape dusky above. Cephalic and caudal femora compressed, swollen but simple; caudal coxa compressed. Thorax finely, transversely wrinkled. Caudal margin of scutellum narrowly black. Cephalo-lateral angle of scutum lemon yellow. One spur of caudal tibia much shorter than the other, both stout, not long. Scape somewhat compressed, the pedicel moderately long; funicle 2 abruptly larger than 1, the others gradually enlarging in succession.

Habitat: Kuranda, Queensland. Jungle, September 15, 1913, two females.

Type: No. *Hy 2753*, Queensland Museum, Brisbane, a female on a tag, the head and hind legs on a slide.

2. CŒLOCYBOMYIA NOVISEXFASCIATA new species.

Female:—Length, 1.80 mm.

Similar to *sexfasciata* but the mandibles are narrower, the first funicle joint (sixth of the antennæ) only slightly longer than the third joint (twice longer in the type species) and the general coloration is greenish yellow instead of a rich reddish brown. Otherwise, surprisingly alike. The thin black line across apex of scutellum is not quite complete.

Described from two females on a card with the species following, labelled " 11. Bred from aborted capsules of red gum caused by a dipterous larva, *Agromyza* sp.? 12-10."

Habitat: Melbourne, Victoria.

Types: In the National Museum, Melbourne, the specimens as mounted and a head on a slide (with type head of the next species).

3. CŒLOCYBOMYIA PERSIMILIS new species

Female:—Length, 1.75 mm.

Like the preceding species but the stripes on the abdomen differ in that they are distinctly narrower (much over their width apart, not as in the allied species) and the sixth is represented by a mesal dot only; also the black line across apex of scutellum is absent, that across cephalic margin of the propodeum also absent. The antennæ differ in the length of the pedicel. The face is inflexed in both species.

Unfortunately before noticing the specific identity of this species its head was mounted with the only head of *noriserfasciatus* and the antennæ became mixed. One species has a longer pedicel than the other.

Described from one female mounted with the above and from the same source.

Habitat: Melbourne, Victoria.

Type: In the National Museum, Melbourne, the above specimen and a slide bearing a head as stated.

4. CŒLOCYBOMYIA NIGRIVENTRIS new species.

Female:—Length, 2.65 mm.

Orange yellow, the head, pronotum, the transverse sclerite following the scutellum, the postscutellum, caudal third or more of each parapside, distal margin of abdomen dorsad, legs, venter of abdomen, scape and propodeum transversely meso-cephalad greenish-yellow. Wings hyaline. Upper half of occiput, venter of thorax, dorsum of abdomen except distal margin, all dorsal thoracic sutures except that between pronotum and mesonotum and between axillæ and parapsides and the propodeum jet black. A black spot at cephalic margin of axilla centrally. Flagellum brownish, closely resembling that of the type species. Mandibles distinctly tridentate.

Described from many females reared from galls on young gum, March 11.

Habitat: Melbourne, Victoria.

Types: In the National Museum, Melbourne, two females on a tag.

The genus resembles *Cælocyba* Ashmead but the scutellum is more flat and there is a transverse sclerite between it and the transverse postscutellum. Also, the marginal, postmarginal and stigmal veins are longer.

NEOPERILAMPUS new genus, Girault and Dodd.

Female:—Differs from *Epiperilampus* Girault in that the axillæ are widely separated.

1. NEOPERILAMPUS NIGER new species of Girault and Dodd. Genotype.

Female:—Length, 2.60 mm.

Jet; scape lemon yellow; tibiæ and tarsi white. Scutum and scutellum with fine polygonal scaly sculpture. Parapsidal furrows deep, very widely separated; axillæ with their mesal angles just mesad of the meso-caudal angles of the parapsides. Scutellum long, distinctly convex. Propodeum glabrous, with a faint median carina and distinct lateral sulci. Abdomen almost smooth but with a few scattered setigerous pin-punctures, the second segment occupying nearly a half of the surface. Venation yellowish, the wings hyaline, the marginal vein thickened, the stigmal not short, nearly as long as the marginal, the postmarginal somewhat longer than the stigmal. Mandibles bidentate, the inner margin of the second tooth obliquely truncate. Antennæ 13-jointed, inserted near the middle of the face, with two distinct ring-joints, the club 3-jointed. Ring-joints very transverse. Funicle 1 slightly shorter than the pedicel, subquadrate, joints 2-6 all much wider than long. Club joints wider than long.

Described from one female taken in jungle, July 21, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2754,* Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

EUCŒLOCYBOMYIA new genus.

Like *Cœlocybomyia* Girault but metallic, the antennal club only 2-jointed, the antennæ 12-jointed. The marginal vein is somewhat longer than the postmarginal which is long and slender, subequal to the stigmal vein. The postscutellum is longer than with the other genus, triangular and as long as wide (much wider than long in *Cœlocybomyia*) while the propodeum bears a distinct median carina. Also, the pedicel is short, not long as in the other genus.

1. EUCŒLOCYBOMYIA AEREA new species. Genotype.

Female:—Length, 1.85 mm.

Dark metallic green, the scutellum æneous, the fore wing with a stain just under the stigmal vein; tegulæ and legs deep golden yellow, the hind coxa and femur metallic green. Scape and pedicel metallic; rest of antennæ golden yellow. Margin of eyes dorsad and face golden yellow. Thorax finely, transversely reticulated, the scutellum shining but polygonally reticulated. Mesopostscutellum subconical, triangular. Propodeum with a distinct median carina, glabrous discally cephalad. Abdomen depressed but conical, as long as the rest of the body, coppery, coarsely scaly, the incisions smooth. Pedicel short, the funicle joints all transverse. Otherwise as in the type species of *Cœlocybomyia*.

Described from one female reared from galls on young gum, March, 1911 (F. P. Spry).

Habitat: Melbourne, Victoria.

Type: In the National Museum, Victoria, the specimen on a tag, the head on a slide.

GENUS CŒLOCYBELLA Girault.

Head normal, rounded; vertex broad; lateral ocelli distant from the eyes. Antennæ inserted near middle of face, slenderly clavate, 13-jointed with three ring-joints, five funicle and three club, all wider than long except distal joint of club; pedicel long obconic, as long as the four joints following (ring-joints and proximal funicle joint). Occipital margin obtuse; prothorax conical, short; mesoscutum with complete, distinct parapsidal furrows, the scutum slightly longer than the ungrooved scutellum. Propodeum with a very weak median carina, the spiracles moderate in size, round; no lateral carinæ nor sulci. Abdomen sessile, depressed, about as long as the thorax, the second segment a third its length; ovipositor not exserted; abdomen from dorsal aspect ovate, widest about the middle, wider than the thorax. Submarginal vein unbroken, at least two and a half times longer than the marginal, the latter nearly twice the length of either stigmal or postmarginal, both of which, for them, are moderately long; stigmal vein with a rather large, rounded knob and a distinct neck which is as long as the diameter of the knob. Discal cilia dense and fine, the marginal very short. Tarsi 5-jointed; tibial spurs double and very unequal, the intermediate longer one very long, the posterior ones short, one much smaller and obscure. Nonmetallic, marked with yellow, the wings hyaline. Axillæ separated by a short distance. Mandibles bidentate, the second tooth truncate, unequal in the two mandibles.

1. CŒLOCYBELLA VARIEGATA Girault. Female. Genotype.

Length, 1.75 mm.

Opaque black marked with yellowish brown or lemon yellow as follows: Caudal margins of eyes, face, cephalo-lateral angle of the parapside, all margins of scutellum except posterior one, vertexal margin of eyes more or less, lateral margins of scutum narrowly, lateral and caudal margins of axilla, caudo-lateral angles of propodeum (lemon yellow), base of abdomen rather broadly (bright lemon yellow), the yellow invaded and divided by an acutely triangular shining black medial area, its base proximad; incisions following segments 2 and 3 on each side, the

whole incision following segment 4 and the tip of abdomen; the yellow on the head also nearly lemon yellow. Legs dark lemon yellow, including the coxæ, the tarsi distad more or less fuscous. Venation smoky black. Pedicel more or less dusky. Ring-joints enlarging distad; first and second funicle joints subequal, longest of the funicle.

Habitat: Brisbane, Queensland. Reared from galls, forest, June, July.

Types: No. *Hy 1204*, Queensland Museum, Brisbane.

CŒLOCYBELLOIDES new genus.

Differs from *Epiperilampus* in having the marginal vein linear and distinctly more than twice longer than wide; *Epiperilampus* bears a thickened, short marginal vein which is about twice longer than wide. Axillæ are barely separated. Two normal ring-joints. Male abdomen slenderer and more depressed.

1. CŒLOCYBELLOIDES AUREUS new species. Female. Genotype.

Length, 2 mm.

Orange yellow, the abdomen with four transverse brownish stripes across the middle close together; face, scape and legs lemon yellow; a small black triangle centrally at base of abdomen; center of occiput, dorsal sutures of thorax, a spot at distal end of each parapside and the venation black. Wings hyaline; flagellum dusky yellow; metathorax on each side of apex of scutellum black. A fifth abdominal cross-stripe near tip but faint. Sometimes proximal two thirds of median line of scutellum narrowly black. Hind coxa with a black marking. Mandibles bidentate. Funicle 1 not as wide as 2.

In the male the cross-stripes on abdomen are more or less confluent; face of pronotum, a large, subquadrate area on cephalic scutum, a little less than distal half of scutellum (except at extreme apex) and its median line, a short median line at apex of scutum (distad), lateral portions of each axilla except at margins and the propodeum black.

Habitat: Port Darwin, Northern Territory. From galls on *Eucalyptus mineata* (8-6-1913 of G. F. Hill).

Types: No. *Hy 2756*, Queensland Museum, Brisbane, a pair, each on a tag; female heads and legs on a slide.

2. CŒLOCYBELLOIDES PULCHRIVARIEGATUS new species.

Female:—Length, 2.25 mm.

Orange yellow, the pronotum, cheeks, legs and base of abdomen rather broadly lemon yellow. The following parts black: Occiput, face of pronotum, scutum except lateral margins, part between axillæ, a diamond-shaped spot center of each axilla from cephalic margin, a bell-shaped area filling all discal part of scutellum, thoracic sutures, propodeum, a small acute wedge shaped spot at immediate base of abdomen at meson, venation and five cross-stripes on abdomen, the first four curved cephalad at lateral margin, 2-4 convexly swollen centrally along cephalic margin (2 more so, 4 quadrately so, all joined broadly at meson); fifth stripe smallest, also swollen cephalad at meson but separated from the others. Mesoventer black. Stigmal knob round, the vein subequal to the postmarginal. A short carina between the axillæ which are slightly separated. Hind tibial spurs double. Funicle joints all much wider than long, much shorter than the pedicel. Mandibles bidentate, the second tooth broad. Funicle 6 shortest, somewhat over twice wider than long. A faint dusky stripe from each lateral ocellus down the face along each eye nearly to middle of face. Each ocellus in a round black spot. Body densely scaly. Dorso-lateral margin of scape and each femur above proximad, dusky. Hind coxa black above.

From many female specimens in the Queensland Museum collections labelled "Reared from gall No. 26, emerged May, 1914, H. Hacker."

Habitat: Brisbane, Queensland.

Types: No. *Hy 2757*, Queensland Museum, Brisbane, three females on a tag.

The male is the same but the cheeks below the eyes are black and the entire thorax except lateral margin of scutum and scutellum narrowly, caudal margin of pronotum and lateral margin of parapsides; abdomen black except meson of venter and the yellow stripe at base above.

PERILAMPELLA new genus of Girault and A. P. Dodd.

Differs from *Ceiocybelloides* Girault in having the axillæ distinctly separated, the marginal vein longer (about five times its own width, about half the length of the submarginal or somewhat less), the ring-joints quadrate or longer than wide and the abdomen less flattened. The axillæ mesad meet the caudal end of each parapsidal furrow. Wings large. Marginal vein linear.

1. PERILAMPELLA FLAMMEITHORAX new species.[2]

Female:—Length, 4 mm.

Differs from *Epiperilampus* Girault in having the postmarginal vein distinctly longer than the stigmal and the marginal vein longer, over a third the length of the submarginal. With the habitus of *Perilampoides*. Flaming red, the propodeum, abdomen and hind coxæ jet black, also the scape above and the funicle and club. Fore wings (also hind wings) deep smoky brown, clearer proximad of the bend of the submarginal vein. Axillæ distinctly separated inwardly but not far apart (within the apex of parapsidal furrows). Marginal vein linear, about six times longer than wide (in *Epiperilampus* not thrice and it is thickened). Mandibles strong, bidentate, the second tooth broad, semicircularly emarginate along apex. First ring-joint a little longer than wide, the second large but wider than long; six funicle joints, the first longest, the distal ones plainly wider than long, 1 longer than wide; pedicel as long as funicle 1; club with an apparent fourth joint.

From two females from the collections of the National Museum of Victoria, labelled "59. Rose Bay, N.S.W. Froggatt, 15-10-91."

Habitat: New South Wales.

Types: In the National Museum, Melbourne, the above specimens on separate tags, a head on a slide.

EUPERILAMPOIDES new genus.

Female:—Apparently differs from *Euperilampus* Walker in having the scutellum long and projecting over the abdomen but not forming a long, stout spine, merely triangular and obtusely pointed at apex, there armed with a short entire plate and reaching not half way to apex of the abdomen. Also, the antennæ are 13-jointed with one ring-joint, the scape rather greatly flattened and curved. Otherwise as in *Perilampus*. The margins of the flat scape are parallel yet curved.

1. EUPERILAMPOIDES SCUTELLATUS new species. Genotype.

Female:—Length, 3.70 mm.

Black with slight metallic reflections, the wings hyaline, the postmarginal vein longer than the marginal which is somewhat longer than the stigmal. Antennæ orange yellow, the scape, distal two joints and upper pedicel black, the latter much smaller than the funicle

[2] Mr. A. P. Dodd suggests, from seeing specimens in Mr. Froggatt's collection, that this is a species described by the latter as a *Cynips* but the whole matter is too indefinite and I prefer to describe the species in its proper place Mr. Froggatt can then establish his species. Mayr had already informed him, I understand, of its relationship. Mistakes are often excusable but uncorrected known ones should never be so.

joints which are wider than long except the first which is quadrate. Distal half of tibiæ and the tarsi reddish brown. Head finely striate, the thorax finely densely punctate, the abdomen mostly glabrous but with several rows of moderate sized punctures along the cephalic margins of each of the three segments. Scape and upper pedicel really dark metallic blue. Axillæ very widely separated, obliquely striate, more than the lateral half strongly deflexed, in the lateral aspect.

From two females captured January 17, 1912 (H. Hacker).

Habitat: Brisbane, Queensland.

Type: No. *Hy 2758*, Queensland Museum, Brisbane, a specimen on a pin.

EPICHRYSOMALLA new genus.

Female:—Antennæ inserted in the middle of the face, 12-jointed without a ring-joint, the club 3-jointed but not well differentiated. Marginal vein short, linear, the stigmal well developed, as long as the marginal, the postmarginal very short. Axillæ rather widely separated, just within the caudal ends of the parapsidal furrows. Scutellum convex. Propodeum noncarinate. Habitus of *Perilampoides*.

Male:—The same but the antennæ only 11-jointed, the club distinctly 3-jointed. The abdomen is depressed, the genitalia exserted. Mandibles bidentate, the inner tooth truncate.

1. EPICHRYSOMALLA ATRICORPUS new species. Genotype.

Female:—Length, 2.43 mm.

Jet black, the wings hyaline; scape and hind coxa ivory white; tibiæ and tarsi pale yellow. Pedicel a little longer than funicle 1 which is urn-shaped, a little longer than wide; other funicle joints wider than long; distal club joint ovate. Face below antennæ with fine setigerous punctures, the thorax very finely subtransversely lineolated, the axillæ longitudinally so, the head variously so; all the center of scutellum glabrous but laterad with the fine sculpture and a few scattered punctures, at apex obscurely, finely wrinkled. Lateral ocellus distant from the eye margin. Scutum obtusely obconical; the scutellum simple. Venation usually black.

Described from three males, fourteen females taken from what appeared to be a cluster of galls (capsule-like) in swollen ripe figs, January 26, 1914 (A. P. Dodd). Jungle.

Habitat: Gordonvale (Cairns), Queensland.

Types: No. *Hy 2759*, Queensland Museum, Brisbane, one male, two females on a tag; male and female antennæ on a slide.

PARACHRYSOMALLA new genus.

Female:—Differs from *Eucœlocybomyia* Girault in having the stigmal vein shorter, the postmarginal longer, long, twice the length of the stigmal and as long (or nearly) as the marginal. Also the abdomen is less flattened, produced beneath. The scutellum has its apical margin impressed, the postscutellum glabrous, with a pair of narrow median carinæ and as long as the subtransverse, noncarinated propodeum. In *Eucœlocybomyia*, there is a punctate cross suture a little before the apex of scutellum, the mesopostscutellum is sculptured like the scutellum and is large, while the propodeum proper bears a median carina and is separated from the shorter, glabrous, transverse metathorax by a foveate suture. Antennæ 12-jointed with one distinct ring-joint, the club 2-jointed, the flagellum not clavate but slender, submoniliform, the club not enlarged. Hind tibial spurs double. Antennæ inserted in the middle of the face. Mandibles normal, bidentate but the broad second tooth has its lateral angle acute and projected. Submarginal vein distinctly broken. Axillæ widely separated. Both this genus and *Eucœlocybomyia* bear short marginal fringes on the fore wing.

1. PARACHRYSOMALLA AEREIFEMUR new species. Genotype.

Female:—Length, 2.15 mm. Robust.

Dark metallic green, the wings hyaline, the knees, tibiæ, tarsi and scape pale yellow, the pedicel dusky pallid; rest of antenna black. Funicle 1 longest, longer than wide, 2 and 3 subequal, subquadrate, 5-7 wider than long, widening at apex; club ovate, short, its apex nippled. Thorax with a distinct scaly sculpture. Ring-joint by far not as wide as the funicle but nearly as long as wide, the pedicel subequal to funicle 4.

Described from one female captured in a forest pocket, September 12, 1913 (A. P. Dodd).

Habitat: Kuranda (Cairns), Queensland.

Type: No. *Hy 2760*, Queensland Museum, Brisbane, one female on a tag; head and hind legs on a slide.

Genus ELATUS Walker.

1. ELATUS ATER new species.

Male:—Length, 1.70 mm. Petiole of abdomen distinctly twice longer than wide, longer than hind coxæ.

Black with a metallic lustre, the wings hyaline; scape and tibiæ yellowish brown, the flagellum dusky brownish; tarsi white. Body glabrous; occiput and neck of prothorax finely reticulated; scutum with delicate transverse lines except caudad. Propodeum rather densely scaly, with a short median carina and indicated from base a long, strong carina on each side of meson and half way to spiracle; the lateral and caudal margins carinated; spiracle reniform. Petiole longitudinally carinate. Abdomen shaped as in *Perilampus*, glabrous. Postmarginal vein nearly twice longer than the very short stigmal, the marginal two thirds or more the length of the submarginal. With the general habitus of *Perilampus*. Antennæ 11-jointed, the short club solid; funicle joints all distinctly wider than long, distinctly shorter than the club, which is shorter than the moderately long, simple scape. Pedicel cupshaped. One distinct ring-joint. Hind tibial spur single, slender. (Sculpture of distal half of dorsal abdomen not seen.)

From one male caught in jungle, January 3, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2761*, Queensland Museum, Brisbane, the specimen on a tag; head and hind legs on a slide.

Genus MELANOSOMELLA Girault.

Antennæ 12-jointed, with one large ring-joint, the club 3-jointed, the male antennæ different and bearing long rami. *The marginal vein two and a half times its own width but shorter than either the stigmal or postmarginal veins.*

Head (cephalic aspect) slightly wider than long; antennæ inserted slightly below the middle of the face, the scrobes short and not deep, the lateral ocelli far distant from the eyes; pronotum not long, the parapsidal furrows complete; head and thorax smooth. Ring-joint large, nearly as long as wide; funicle apparently compressed, the joints all transverse and lamellate or produced toward one side, the distal much less so and largest of the funicle; pedicel subquadrate, much longer than the proximal funicle joints; club long-ovate, longer than the cylindrical, simple scape, its joints obliquely truncate, the distal joint short and conic. Fore wings normal, the marginal cilia sparse and short. Propodeum with a slight

median carina, its spiracle large and nearly round. Abdomen short and stout, no longer than the thorax, its second segment occupying half of the surface. Scutellum longer than the propodeum. Posterior tibiæ apparently with but one apical spur. The male is the same, but abdomen more depressed and cylindric; antennæ entirely different, the scape much shorter, dilated ventrally, pedicel not much longer than thick, the ring-joint like a ring; first funicle joint very transverse and lamellate, following five joints increasing in length, each bearing a long, curved, cylindrical ramus from its disto-lateral margin, joint 2 no longer than the diameter of its ramus and practically forming a continuation of it, joint 3 slightly longer than wide; joint 6 much longer than wide; the rami longer proximad, the shortest and distal one distinctly longer than any single joint of antenna. Proximal joint of club elongate obconic, forming half of the club and longer than the distal funicle joint; the other two club joints subequal. Funicle and rami with sparse, rather long, fine hairs. Male antennæ 12-jointed.

1. MELANOSOMELLA FLAVIPES Girault. Female, male. Genotype.

Length, 3 mm.

Black and shining; face, genæ, legs (except coxæ, the tarsi more brownish), scape (except at tip where it is blackish), margins of eyes dorsad and caudad more or less obscurely, lemon yellow; black of the vertex at meson projects obtusely into the yellow of face, some distance directly cephalo-ventrad of cephalic ocellus. Tegula brownish. Fore wings with a distinct brownish band nearly across it from the apex of submarginal vein; this stripe is interrupted. Venation black. Antennal flagellum brownish, subfuscous. Face with thimble punctures. Remainder of body apparently simple and shining more or less. The fuscous stripe on the wing of the male is subobsolete.

Habitat: New South Wales. Galls on *Eucalyptus*.

Types: No. *Hy 1193*, Queensland Museum, Brisbane, a pair on two tags, the antennæ on a slide.

DIAGNOSIS OF THE AUSTRALIAN GENERA OF PERILAMPIDÆ.

Females.

Abdomen sessile. Parapsidal furrows normal.

Antennæ inserted ventrad of the middle of the face, near the clypeus. Scutellum flat. Axillæ separated.

Antennæ 13-jointed with three ring-joints, the club 3-jointed; postmarginal vein somewhat longer than the marginal, subequal to the stigmal. Nonmetallic; impunctate .. .. CŒLOCYBOMYIA Girault (Type: *C. sexfasciata* Girault).

Antennæ 12-jointed with three ring-joints, the club 2-jointed; postmarginal vein subequal to the stigmal and somewhat shorter than the marginal. Metallic, impunctate. Scutellum with a punctate cross-furrow before apex .. .. EUCŒLOCYBOMYIA (Type: *E. aerea* Girault).

Antennæ inserted on or near the middle of the face; scutellum usually convex. Axillæ sometimes not separated.

Scutellum long, projecting caudad to middle of the abdomen but not produced at apex; scape flat and broad.

Antennæ 13-jointed with one ring-joint; postmarginal vein longer than the marginal. Metallic; punctate .. .. EUPERILAMPOIDES Girault (Type: *E. scutellatus* Girault).

Scutellum normal or at most extending caudad over propodeum only.

Antennæ 12-jointed.

Club 3-jointed. Nonmetallic.

One ring-joint.

Axillæ a little separated; scutellum long; abdomen globular, large; hind tibial spur single.

Marginal, postmarginal and stigmal veins more or less equal, not very long .. ..
PERILAMPOIDES Girault (Type: *P. bicolor* Girault).

Marginal vein shorter than postmarginal and stigmal .. ..
MELANOSOMELLA Girault (Type: *M. flavipes* Girault).

No ring-joint.

Axillæ rather widely separated. Club not well differentiated; postmarginal vein very short .. ..
EPICHRYSOMALLA Girault (Type: *E. atricorpus* Girault).

Club 2-jointed; metallic.

One ring-joint. Postmarginal vein twice the length of the stigmal, subequal to the marginal. Flagellum submoniliform. Scutellum flat. Axillæ widely separated .. ..
PARACHRYSOMALLA Girault (Type: *P. aereifemur* Girault).

Antennæ 13-jointed.

One ring-joint. Thorax densely punctate, the body strongly metallic.

Antennæ normal, subclavate; abdomen short, strongly inflexed, from caudal aspect triangular; body short and stout. Scutellum convex, normal .. .. PERILAMPUS Latreille.

Two ring-joints. Thorax not densely punctate, the body nonmetallic.

Marginal vein thickened, about twice longer than wide, more or less equal to the stigmal and postmarginal.

Axillæ barely separated .. ..
EPIPERILAMPUS Girault (Type: *E. xanthocephalus* Girault).

Axillæ widely separated .. ..
NEOPERILAMPUS Girault and Dodd (Type: *N. niger* Girault).

Marginal vein linear, distinctly more than twice longer than wide.

Axillæ barely separated .. ..
CŒLOCYBELLOIDES Girault (Type: *C. aureus* Girault).

Axillæ distinctly separated .. ..
PERILAMPELLA Girault and Dodd (Type: *P. flammeithorax* Girault).

Three ring-joints.

Marginal vein about twice longer than the stigmal; axillæ a little separated .. CŒLOCYBELLA Girault (Type: *C. variegata* Girault).

Abdomen distinctly petiolate.

Antennæ 11-jointed with one ring-joint, the club solid. Like *Perilampus* but not coarsely punctate. My interpretation of the genus .. .. .. ELATUS Walker.

The gall-making genera I had placed into four distinct families before their position was known. Once in the Pteromalidæ with the Brachyscelidiphagini; once in the Eurytomidæ as a new tribe; twice in the Cleonymidæ, with which the forms are certainly closely allied; and finally in the Perilampidæ. The caudal tibiæ should have two spurs in all the genera, but one only is recorded for *Perilampoides*. Some of the genera, therefore, may have to be removed to the Pteromalidæ, yet they seem a natural group.

AUSTRALIAN HYMENOPTERA CHALCIDOIDEA—VI.

SUPPLEMENT.[1]

By A. A. Girault.

Magnification as previously.

Family PTEROMALIDÆ.

Tribe PTEROMALINI.

Genus PTEROMALUS Swederus.

1. PTEROMALUS AUSTRALICUS new species of Girault and A. P. Dodd.

Female:—Length, 3 mm.

Dark metallic blue; second abdominal segment dorsad, brilliant metallic blue; segments 3-5 dorsad, purple; coxæ metallic; femora dark brownish; trochanters, knees and tibiæ, golden yellow; tarsi paler yellow; antennal scape golden yellow; rest of antennæ fuscous. Thorax densely punctate; parapsidal furrows almost, or quite, complete; *scutellum with a distinct cross-suture.* Propodeum rather long, with a neck; distinctly tricarinate; spiracles large, oval. Abdomen wider but no longer than the thorax; ovate; second segment occupying fully one third of the surface; third two thirds length of second; fourth one half length of third; 4-6 subequal; seventh longer than sixth. Wings hyaline; venation yellow; marginal and postmarginal veins subequal; stigmal vein somewhat shorter. Antennæ 13-jointed, two ring, three club joints; first funicle joint distinctly longer than the pedicel, one half longer than wide; 2-6 gradually shortening, but the sixth is distinctly longer than wide; club as long as two preceding joints united; first club joint a little the longest of club.

Male:—Not known.

Described from one female caught on foliage of *Eucalptus platyphylla*, December 8, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2762,* Queensland Museum, Brisbane, the specimen on a tag, plus a slide bearing the head and a hind leg.

Genus APLASTOMORPHA Crawford.

1. APLASTOMORPHA AUSTRALIENSIS (Girault).

Neocatolaccus australiensis Girault.

Three females from windows, Innisfail, Queensland, January 11, 1912 (A.A.G.). Another female at Cairns, Queensland, sweeping the foliage of tea trees, November 1, 1911 and one female from a window, Hambledon Junction (Cairns), November 2, 1911. The general colour is very dark. The abbreviated parapsidal furrows are faint. The postmarginal vein is nearly as long as the marginal; segment 3 of abdomen as long as 2, 4 a little longer than

[1] *See* these Memoirs, II, pp. 303-334.

either, longest, 2 and 3 together occupying half of the surface. Femora concolorous. The general coloration may be brighter in individuals. Common on windows at Gordonvale. On May 11, 1914, at this latter place, this species was abundant in a box of seed corn infested with a common grain weevil (*Calandra*) and obtained from a local grocer. Formerly, I had seen it abundant in other lots of this corn received from the same grocer and infested with the same weevil (most probably *granaria* but not critically examined). The spiracular sulci are present. Pubescence not especially noticeable. The lateral carina is short, nearly wholly transverse and originates at the lateral side of the fovea at cephalic margin of propodeum. A rather common species. Types re-examined.

2. APLASTOMORPHA SAGA new species.

Female:—Length, 2.75 mm.

Rather bright metallic green, the coxæ concolorous, the legs white, but the last two pairs of femora brownish black. Scape reddish brown. Differs from *australiensis* in having the lateral carinæ complete, not curving to form a cross-carina. Antennæ black, the pedicel not quite as long as the distal funicle joint which is somewhat wider than long, the joint preceding it quadrate; third club joint much the shortest. Clypeus longitudinally striate. Marginal, postmarginal, and stigmal veins are a little longer than with *australiensis* but of the same relative lengths. Parapsidal furrows incomplete. Much brighter than *australiensis*. Segments 2, 7 and 5 of abdomen longest, 3 and 4 short, none long.

Male:—Unknown.

Described from one female from a gall on Eucalyptus, forest, November 1, 1913. The specimen of *australiensis* formerly recorded from miscellaneous galls was this species.

Habitat: Gordonvale (Cairns), Queensland. Gall on Eucalyptus.

Type: No. *Hy 2763*, Queensland Museum, Brisbane, the above female on a tag, the head and caudal legs on a slide.

"This species is at once distinguished from *pulchra* Girault and Dodd by having a long slender abdomen, the latter much longer than the thorax." (A. P. Dodd.)

3. APLASTOMORPHA PULCHRA new species of Girault and A. P. Dodd.

Female:—Length, 2.25 mm.

Agreeing with the generic description, except that the lateral carinæ on the propodeum are present and distinct.

Brilliant metallic blue-green, the coxæ concolorous; abdomen suffused with brown; eyes garnet; rest of legs and antennal scape golden yellow; pedicel and ring-joints dusky yellow; flagellum black. Wings hyaline, the venation golden yellow. Thorax densely punctate; parapsidal furrows two thirds complete. Abdomen no longer than the thorax; second segment occupying almost one third of the surface; third not one half as long; 4-6 subequal, each longer than third. First funicle joint distinctly longer than the pedicel, distinctly longer than wide; 2-5 wider than long; club not much longer than wide; ring-joints rather small.

Male:—Not known.

Described from one female caught by sweeping grass and foliage, forest, January 29, 1913 (A. A. Girault).

Habitat: Townsville, Queensland.

Type: No. *Hy 2764*, Queensland Museum, Brisbane, the specimen on a tag, the head and a hind leg on a slide.

4. APLASTOMORPHA FLAVOBASALIS new species of Girault and A. P. Dodd.[2]

Female:—Length, 1.90 mm.

Agreeing with the description of *pulchra* Girault and Dodd but the femora are concolorous with the thorax, the rest of the legs white; (scape not seen); pedicel and ring-joints concolorous with the rest of the flagellum. Abdomen brown, very lightly washed with metallic, the proximal fifth yellow, the incisions of the segments showing as fine yellow cross-stripes. The abdomen is rather longer and more slender than with *pulchra*; its second segment occupies a fourth of the surface and the caudal margin of segments 2 and 3 at meson is slightly incised. Joints 2-5 of funicle not wider than long, 5 quadrate; club over twice longer than wide.

Male:—Not known.

Described from one female captured by sweeping in a jungle pocket, January, 17, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2765*. Queensland Museum, Brisbane, the above specimen on a tag, the head and a caudal leg on a slide.

5. APLASTOMORPHA RETICULATA new species of A. P. Dodd.

Female:—Length, 2.60 mm.

Dark metallic blue, the coxæ and femora concolorous, the base of the abdomen brilliant blue-green, the tibiæ and tarsi white; antennal scape yellow; pedicel brown, rest of antennæ black. Thorax polygonally reticulate, the reticulation in raised lines, the propodeum more finely so. Propodeum with a median and lateral carinæ, also a complete cross-carina; spiracular sulci obscure. Abdomen pointed conic-ovate, scarcely longer than rest of body, second segment occupying nearly one fourth of surface, its caudal margin convex, the third one fourth its length, the others lengthening, the seventh quite as long as the second and nearly as long as the two preceding segments united. Wings hyaline, postmarginal vein twice as long as the stigmal and a little longer than the marginal. Pedicel subequal to funicle 3, funicle 1 longest, 5 almost quadrate, first club joint as long as the preceding joint and as long as the other two club joints combined.

Male:—Not known.

Described from one female caught in jungle, February 5, 1914 (A. P. Dodd).

Habitat: Babinda, Queensland.

Type: No. *Hy 2766*, Queensland Museum, Brisbane, the female on a tag; head and hind legs on a slide.

6. APLASTOMORPHA 5-FASCIATA new species.

Female:—Length, 1.60 mm.

Brassy green, the wings hyaline, the coxæ concolorous, the scape and legs dull golden yellow, the caudal femora subfuscous, darker. Abdomen dull golden yellow and with five cross-stripes counting the fifth at tip, the first a short distance out from base. Antennæ dark brown. Abdomen subpetiolate. Propodeum with a thin, obscure median carina, more like a ruga and more obscure near apex (distad), the lateral carinæ complete, distinct, abruptly changing direction from caudo-laterad to caudo-mesad, opposite (mesad of) the spiracle; spiracular sulcus present, not very distinct. Thorax including propodeum, finely punctate. Postmarginal vein barely shorter than the marginal, a little longer than the stigmal. Funicles 4 and 5 each a little longer than wide (in *pulchra*, a little wider than long). Pedicel wholly dark brown not mostly yellow as in *pulchra*. Funicle 1 longest, longer than the pedicel, somewhat longer than wide.

From one female caught October 11 (H. Hacker).

Habitat: Brisbane, Queensland.

Type: No. *Hy 2767*, Queensland Museum, Brisbane, the specimen on a tag; head and hind legs on a slide.

[2] Compare *Eurydinoteloides flavibasalis*.

TRIBE RAPHITELINI.

GENUS NASONIA Girault and Sanders.

1. NASONIA BREVICORNIS Girault and Sanders.

The footnote on page 307 of Part VI (these Memoirs, Vol. II, p. 307) refers to this species and not to *Muscidifurax raptor* Girault and Sanders which I have not seen from Australia.

I took a specimen of *brevicornis* from a window of a wool-house at Brisbane, Queensland, October 3, 1911 and Mr. Edmund Jarvis, Assistant Government Entomologist, sent me six females reared from dipterous pupæ at Longreach and Aramac, Queensland, in October, 1913. The host was the sheep fly maggot. The antennæ of *brevicornis* are inserted slightly above the ventral ends of the eyes. The spiracular sulcus is distinct, just laterad of the lateral carina. A common species.

TRIBE ROPTROCERINI.

GENUS PARURIELLA Girault.

This genus is identical in form, or nearly, to the species referred to *Systasis*.

1. PARURIELLA HORRIDULA new species.

Female:—Length, 1.32 mm.

Like *Systasis sepositus* Girault but the antennæ differ in that the funicle joints gradually enlarge, joint 1 or 2 smallest, a little wider than long, the others gradually widening. Form identical with the species referred to. Propodeum with a median carina only.

Male:—Unknown.

Described from one female captured by sweeping miscellaneous vegetation, October 5, 1911.

Habitat: Roma, Queensland.

Type: No. *Hy 2768*, Queensland Museum, Brisbane, the specimen on a tag, the head and hind legs on a slide.

"Similar to *persimilis* but rather stouter, the propodeum still shorter, the lateral carinæ absent, the funicle more clavate, the first funicle joint smaller" (A. P. Dodd).

2. PARURIELLA PERSIMILIS new species of A. P. Dodd and A. A. Girault.

Female:—Length, 1.60 mm.

Very similar to *australiensis* Girault but not so slender, the propodeum distinctly shorter the venation pale yellow, the first two pairs of tibiæ white like the tarsi, the caudal tibiæ brownish.

Male:—Not known.

Described from a female captured by sweeping edge of jungle, December 20, 1912 (A. P. Dodd).

Habitat: Kuranda, Queensland.

Type: No. *Hy 2769*, Queensland Museum, Brisbane, the female on a tag, the head and hind legs on a slide.

"In *australiensis*, the lateral carina is weaker cephalad and originates at the caudal apex of the spiracle" (A.A.G.).

GENUS ROPTROCEROPSEUS Girault.

1. ROPTROCEROPSEUS ALBIPES new species of A. P. Dodd and Girault.

Female:—Length, 2.30 mm.

Very dark metallic blue, the abdomen dull greenish, the cephalic coxæ and basal half of middle coxæ concolorous, rest of legs and antennal scape yellowish white, pedicel and funicle joints yellowish brown, the club lemon yellow. Thorax with fine, polygonal scaly sculpture, not raised, the propodeum rugulose towards the centre, practically smooth for the rest. Abdomen pyriform, depressed above, second segment occupying a third of the surface. Cross-suture of scutellum foveate. Marginal and postmarginal veins subequal, the latter twice as long as the stigmal. Pedicel a little longer than any of the funicle joints, of which the first is somewhat longer than wide, the fifth wider than long; club joints wider than long. Wings hyaline. Mandibles 4-dentate. Lateral carinæ of propodeum weaker than the median.

Male:—Not known.

Described from one female captured in jungle, February 5, 1914 (A. P. Dodd).

Habitat: Babinda, Queensland.

Type: No. *Hy 2770*, Queensland Museum, Brisbane, the above specimen on a tag, the head on a slide.

2. ROPTROCEROPSEUS SIMILIFORMIS new species of Girault and A. P. Dodd.

Female:—Length, 1.38 mm.

Almost exactly similar to *albicornis* Girault except that the mandibles are 3 and 4-dentate and the first funicle joint is a little wider than long, a little shorter than the pedicel (in the genotype distinctly longer than wide, the pedicel also longer than wide). Hind coxæ compressed in both species, the propodeal spiracle minute, round. In the genotype, the stigmal vein is somewhat over half the length of the marginal; in this species the latter seems somewhat longer in relation to the stigmal vein. Compared with type of *albicornis*.

Described from one female caught by sweeping in forest, February 6, 1913 (A. P. Dodd).

Habitat: Northern Queensland (Gordonvale near Cairns).

Type: No. *Hy 2771*, Queensland Museum, Brisbane, the above specimen on a tag, the head on a slide.

3. ROPTROCEROPSEUS ALBICORNIS Girault.

Two females, January, 1913 at Gordonvale (Cairns), Queensland, reared from galls on *Melaleuca* (A. P. Dodd). Rather common.

GENUS URIELLOIDES Girault.

This genus resembles somewhat *Aplastomorpha* Crawford rather than *Neocatolaccus* Ashmead.

PSEUDANOGMUS new genus of A. P. Dodd and A. A. Girault.

Type: The following species.

1. PSEUDANOGMUS FASCIIPENNIS new species of A. P. Dodd. Genotype.

Female:—Length, 2 mm. Rather stout and robust.

Very dark metallic green, the coxæ concolorous, the abdomen burnished coppery, rest of legs golden yellow; antennal scape pale yellow, rest of antennæ blackish. Both mandibles 4-dentate. Antennæ inserted against the mouth, 13-jointed, with three ring- and three club

joints. Scape very long and slender, two thirds as long as the face; pedicel slender, much longer than any of the funicle joints which are subequal, each somewhat longer than wide; first two club joints about subequal, as long as wide; ring-joints moderately large. Thorax with very fine, dense longitudinal reticulation, the propodeum practically smooth. Parapsidal furrows incomplete. Scutellum with a faint cross-suture. Propodeum tricarinate, the carinæ very distinct; spiracle small, rounded, situated further caudad than usual, no spiracular sulci. Abdomen no longer or wider than the thorax, straight beneath, slightly convex above; second segment occupying about a fourth of the surface, the others more or less subequal; caudal margins of all segments straight. Fore wings with a sooty blotch just beneath the curve of the submarginal vein and another beneath apex of stigmal vein; marginal vein twice as long as the stigmal, the latter as long as the postmarginal, the venation distinct.

Male:—Not known.

Described from one female captured by sweeping foliage and grass along the Mulgrave River, mostly jungle, March 30, 1913 (A.A.G.).

Habitat: Mulgrave River, Cairns District, Queensland.

Type: No. *Hy 2772*, Queensland Museum, Brisbane, the female on a tag, the head and hind legs on a slide.

This genus differs from *Urichloides* Girault in having the antennæ inserted against the mouth and both mandibles 4-dentate.

2. PSEUDANOGMUS FUSCIPES new species.

Female:—Length, 1.60 mm.

Very similar to the genotype, being nearly black but the femora are concolorous, the tibiæ much lighter (brown) and the funicle joints are somewhat wider than long. Mandibles not distinctly seen but one 4-dentate. Flagellum black. Both species are densely, finely scaly punctate, the propodeum scaly.

From one female caught October 11 (H. Hacker).

Habitat: Brisbane, Queensland.

Type: No. *Hy 2773*, Queensland Museum, Brisbane, the specimen on a tag; head, caudal tibiæ and wings on a slide.

"In this genus the abdomen is flat, rounded ovate, wider than the thorax; the head is longer than wide, the antennal club with an apparent fourth joint which is distinct but does not appear to be articulated; the scutellum has not a transverse suture before apex." (A. A. Girault.)

PARANOGMUS new genus of Girault and A. P. Dodd.

Female: Head no wider than the thorax, not much wider than long (cephalic aspect); eyes moderately large. Antennæ inserted below the middle of the face, on a line with the ventral ends of the eyes; 11-jointed, with three ring-joints and a solid club. Mandibles 4-dentate. Pronotum short; parapsidal furrows half complete; scutellum simple. Propodeum short, broad, without a neck, glabrous, tricarinate, the carinæ well defined and also with a few irregular longitudinal carinæ; spiracles round, no spiracular sulci. Abdomen conic-ovate, scarcely longer than the thorax; second segment the longest, occupying one fourth of the surface, third not one half as long; fourth longer than third; fifth longer than fourth, two thirds as long as second; sixth and seventh each about as long as fourth. Marginal vein twice as long as the stigmal, which is moderately long; postmarginal vein slightly longer than the stigmal.

1. PARANOGMUS PALLIDICORNIS new species of Girault and A. P. Dodd. Genotype.

Female:—Length, 1.75 mm.

Brilliant metallic coppery green, the coxæ concolorous; rest of legs (except apical joint of tarsi which is dusky) and the antennæ, very pale straw yellow. Wings hyaline, the venation almost white. Thorax, except the smooth propodeum, finely reticulate, the reticulation in raised lines. Pedicel distinctly longer than any of the funicle joints, which are subquadrate, a little wider than long; flagellum gently clavate; club twice as long as wide.

Described from two females caught by sweeping in forest, mainland, near Double Island, December 24, 1911 (A.A.G.).

Habitat: Double Island (Cairns), mainland, Queensland.

Type: No. *Hy 2774*, Queensland Museum, Brisbane, the specimen on a tag, the head and hind legs on a slide.

URIELLOMYIA new genus.

Female:—Like *Uriella* Ashmead but the abdomen with the third segment next longest, the second longest, occupying nearly a fourth of the surface and distinctly longer than the third. Mandibles 3- and 4-dentate. Propodeum tricarinate and with a long cross-carina which crosses the median and lateral carinæ and passes in front of the rather small, oval spiracle. Parapsidal furrows rather short, nearly complete. Postmarginal and stigmal veins subequal, moderate in length as is also the marginal which is about one and two third times the length of the stigmal. Antennæ 13-jointed with two ring-joints. Scutellum simple. Pronotum transverse. The axillæ are not advanced.

Male:—Not known.

Type: The following species.

1. URIELLOMYIA RESOLUTA new species. Genotype.

Female:—Length, 1.85 mm. Robust.

Very dark æneous green, the wings hyaline, the venation, legs, scape and pedicel yellow brown; pedicel dark above. Coxæ dark metallic. Thorax densely, finely reticulately scaly. Pedicel somewhat longer than any of the funicle joints of which the first is a little longer than wide and narrower than the others. 2 and 3 a little longer than 1, the remaining three quadrate. Scape slender. Club without a nipple.

Described from four female specimens captured from the windows of a grocery store, October, 30, 1911.

Habitat: Port Douglas, Queensland.

Type: No. *Hy 2775*, Queensland Museum, Brisbane, the above females on tags (two pins) and a slide with two heads and hind legs.

One female on a window, Thursday Island, Torres Strait, March 14, 1912.

2. URIELLOMYIA FLAVICORNIS new species of Girault and A. P. Dodd.

Female:—Length, 2.60 mm.

Differs from the generic description in bearing 4-dentate mandibles and in propodeal characters; propodeum with a pair of very short, abbreviated median carinæ at base and complete lateral carinæ which branch, one branch running obliquely to the caudal margin mesad, the other to the caudal margin laterad; no cross-carina.

Very dark metallic green, the coxæ concolorous; abdomen shining metallic coppery; antennæ golden yellow; femora and basal half of tibiæ yellowish brown; apical half of tibiæ

and the tarsi (except dusky apical joint) white. Wings hyaline; marginal vein one third longer than the stigmal and one fourth longer than the postmarginal. Thorax, including propodeum, punctate; parapsidal furrows half complete. Abdomen conic-ovate, a little longer than the head and thorax united; second segment occupying one fourth of the surface, distinctly longer than the third; 3-7 about subequal. Antennæ inserted about middle of face; 13-jointed, with two ring, three club joints; pedicel slender, a little longer than first funicle joint; ring-joints usual; flagellum gently clavate; first and second funicle joints distinctly longer than wide, the sixth subquadrate, a little wider than long; club twice as long as wide, the first joint the longest.

Described from one female caught by sweeping in forest, July 1, 1913 (A. P. Dodd).

Habitat: Northern Queensland (Gordonvale near Cairns).

Type: No. *Hy 2776,* Queensland Museum, Brisbane, a female on a tag, the head and a hind leg on a slide.

3. URIELLOMYIA HACKERI new species of A. P. Dodd.

Female:—Length, 2.60 mm.

Metallic green; antennal scape and pedicel, coxæ and femora concolorous, the tibiæ slightly washed with metallic, the tarsi and most of tibiæ yellow; antennal funicle fuscous, the club yellowish. Thorax reticulately punctate; parapsidal furrows incomplete; scutellum simple. Propodeum short, glabrous, with a median and lateral carinæ, the median carina dividing caudad; also mesad of the lateral carina there is another distinct longitudinal carina. Abdomen conic-ovate, depressed above, convex beneath, a little longer than the head and thorax united, segments 2, 5, 6 and 7 about subequal, longest, the third the shortest; base of abdomen smooth and shining, the rest more or less finely scaly. Fore wings hyaline, the marginal vein somewhat longer than the postmarginal, the latter somewhat longer than the stigmal. Mandibles 4-dentate, the teeth not acute. Flagellum gently clavate; pedicel longer than any of the funicle joints of which the second is longest, a little longer than wide, the others wider than long; antennæ inserted about middle of face.

Male:—Not known.

Described from one female labelled "Brisbane, H. Hacker, 10-8-13."

Habitat: Brisbane, Queensland.

Type: No. *Hy 2777,* Queensland Museum, Brisbane, the specimen on a tag, the head and hind leg on a slide.

URIELLOPTEROMALUS new genus.

Type: The following species.

1. URIELLOPTEROMALUS SUBPLANITHORAX new species.

Female:—Length, 1.65 mm.

Differs from *Uriella* Ashmead in bearing axillæ which are much advanced, being cephalad of the scutellum; the mandibles are tridentate, the abdomen is no longer than the thorax though conic-ovate, the second segment somewhat the longest, occupying about a fifth of the surface, a third longer than segment 3; the thorax is rather flattened and the postmarginal and stigmal veins are rather short, the former a little the longer, the stigmal just about a third the length of the marginal, not sessile; marginal vein a fifth shorter than the submarginal. Parapsidal furrows delicate, a third complete from cephalad.

Dark æneous green with purplish tinges, the wings hyaline, the legs reddish brown except the concolorous coxæ. Antennæ honey yellow, the funicle joints wider than long but the proximal ones a little longer than the distal ones; scape short, the pedicel barely longer than wide; inner tooth of mandible truncate. Propodeum with a delicate median carina and no others. Head and thorax finely, delicately polygonally scaly. Third club joint not as distinctly separated as are the others. Lateral margins of scutellum subcarinate. Pronotum (dorsal aspect) transverse. Propodeal spiracle separated from caudal part of propodeum by a transverse, obtuse elevation of the surface (not a carina).

Male:—Not known.

Described from one female captured either by sweeping in the jungle or else from a window in a jungle settlement, December 30, 1911.

Habitat: Yungaburra, Queensland.

Type: No. *Hy 3465*, Queensland Museum, Brisbane, the above specimen on a tag, the head and a hind tibia on a slide.

In *Uriellomyia* the axillæ are not advanced (the genotype examined).

NEROPTROCERUS new genus.

Female:—Agreeing with the description of *Roptrocerus* Ashmead but the club solid, the antennæ thus but 10-jointed. The postmarginal and marginal veins are longer but neither long.

Male:—Unknown.

Type: The following species.

1. NEROPTROCERUS SUBATER new species.

Female:—Length, 1.80 mm. Stout, rather short.

Black metallic green, the wings hyaline, the coxæ concolorous, the legs yellowish brown, the cephalic femur concolorous. Scape concolorous with the legs, the pedicel dusky-brown, rest of antenna black. Funicle 1 longest, subequal to pedicel, somewhat longer than wide and widest distad; funicle 2 somewhat wider than long, 3 and following still wider. Funicle joints subpetiolate. Club longer than the two preceding joints united. Head and thorax uniformly densely shagreened (minute papillæ crowded together). Cross-suture of scutellum and parapsidal furrows well-defined, the latter complete. Propodeum subglabrous, the spiracle rather large, round, cephalad. Median carina of propodeum narrow, not straight. Axillæ not advanced. Segment 2 of abdomen occupying a third of the surface, caudal margins of all segments straight, 2 glabrous, the others scaly cephalad; segment 3 shortest, transverse.

Described from one female captured in jungle, February, 11, 1914 (A. P. Dodd).

Habitat: Babinda, Queensland.

Type: No. *Hy 2778*, Queensland Museum, Brisbane, the specimen on a tag; head, fore and hind legs on a slide with type appendages of *Hetreulophus bifasciatifrons* Girault.

Tribe MERISINI.

Genus AMICROMELUS Girault.

This genus belongs to the Metastenini of the Miscogasteridæ instead of the Trydymini as formerly stated by mistake.

Tribe BRACHYSCELIDIPHAGINI.

Genus CŒLOCYBA Ashmead.

1. CŒLOCYBA VIRIDILINEATA Froggatt.

This species is doubtless a *Gyrolasella* of the elachertine Enlophidæ which see.

2. CŒLOCYBA VARIFASCIATA new species.

Female:—Length, 1.25 mm.

Golden yellow, the thorax orange yellow, the wings hyaline. Parapsidal furrows, cephalic and caudal margins of propodeum, tip of ovipositor valves, thorax just cando-laterad of each axilla around their margins and the following abdominal markings black: A crescent across meson before tip and four transverse stripes between this and base, all four interrupted about half way to lateral margin on each side so that they are composed of two transverse marginal spots and a transverse spot across the meson. Mandibles tridentate. Distal tarsal joint and club dusky black, the club solid, the antennæ 11-jointed; first two funicle joints subequal, like ring-joints, the third larger but still like a ring-joint. Venation yellow; post-marginal and stigmal veins subequal, each a little longer than the marginal. Fore wings with a broad hairless line from base of marginal vein, closed caudad. Caudal wings finely densely ciliate, with about eleven lines of cilia where broadest. Vertex, pro- and mesonotum with numerous but not dense black hairs. Legs as in *acincta*. Propodeum transverse.

From one female caught at 1,000 feet in forest, May 17, 1914 (A. P. Dodd).

Habitat: Upper Tweed River, New South Wales.

Type: No. *Hy 2779*, Queensland Museum, Brisbane, the specimen on a slide.

Genus ISOPLATA Girault.

"The antennæ in this genus are only 12-jointed, two ring, three club joints, the ring-joints small. The antennæ are inserted well below the middle of the face." (A. P. Dodd.)

Types of *geniculata* re-examined (A. P. Dodd and A.A.G.).

1. ISOPLATA FLORIOLA new species of A. P. Dodd and Girault.

Female:—Length, 1.50 mm.

Similar to *geniculata* Girault but all coxæ metallic, funicle 1 not narrower than the others, the funicle joints all wider than long, the pedicel is shorter than in the genotype yet longer than any of the funicle joints, the club stouter, its joints much wider than long (longer than wide in *geniculata*).

Male:—Unknown.

Described from three females in the collection of the Queensland Museum, labelled "From flowers of *Bœckea*, April 22, 1913, H. Hacker."

Habitat: Brisbane, Queensland.

Type: No. *Hy 2780*, Queensland Museum, Brisbane, the above specimens on a tag, two heads on a slide.

Subfamily EUNOTINÆ.

Genus EURYCRANIUM Ashmead.

1. EURYCRANIUM BÆUSOMORPHA new species.

Female:—Length, 0.85 mm. Short and robust, resembling the *Bœinæ* and the genus *Hadronotus* Foerster in form.

Apparently differing from the genotype in bearing a cross-suture near apex of scutellum and perhaps in other characters as below.

Dark metallic green, the wings hyaline; the wide, thin, triangular head, the short, flattened, rounded (dorsal aspect) abdomen and the legs (paler) deep golden, or orange, yellow, the antennæ pale yellow. Lateral ocelli far distant from the eye margins. Antennæ inserted at the mouth, 8-jointed, the club enlarged, solid; the scape slender, long; the pedicel of usual length, much longer than any of the funicle joints all of which are wider than long, 5 largest, each enlarging in succession, 5 twice the length of 1 and much wider. Proximal joint of hind tarsus abruptly longer than the others, the tibial spur normal. Mandibles slender, tridentate, the teeth slender. Thorax finely reticulate scaly; the convex cross-suture of scutellum delicate; propodeum subconical, coarsely foveate. Second segment of abdomen occupying somewhat over a third of the surface; second and third combined, occupying nearly two thirds. Pronotum large, transverse-quadrate, the scutum shorter than the scutellum; parapsidal furrows complete. Postmarginal vein slightly longer than the stigmal, both slender but of moderate length, the marginal distinctly longer than either. Thorax very sparsely pubescent. No ring-joint.

Described from one female caught in forest, December 20, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2781,* Queensland Museum, Brisbane, the specimen on a tag, the head and hind tibiæ on a slide.

PAREUNOTUS new genus.

Female:—In Ashmead's table running to *Anysis* Howard, the antennæ being 10-jointed, strongly clavate, the club solid; anteunæ inserted below the middle of the face. Mandibles tridentate. Hind tibial spur normal, rather stout. Face inflexed. Postmarginal and stigmal veins long and slender, the former a little the longer, the marginal a little shorter than the stigmal, about three times longer than wide or somewhat more. Hind coxæ large. Axillæ widely separated. Parapsidal furrows deep. Propodeum transverse, the postscutellum overhanging it. A broad oblique hairless line from apex of submarginal vein. Hind femur compressed. Scutellum with a faint cross-suture indicated before apex. Scutellum distinctly shorter than the scutum; the postscutellum triangular, tolerably large.

Male:—Not known.

Type: The following species.

1. PAREUNOTUS FLAVICORPUS new species.

Female:—Length, about 0.98 mm.

Pale honey yellow and finely scaly. A stripe across cephalic margin of propodeum, the indicated cross-suture of scutellum and cephalo-lateral ends of the axillæ dark purplish black. Wings hyaline. First three funicle joints like ring-joints but each enlarging, 3 not a third the length of 4 which with 5 and 6 are distinctly wider than long and subequal, subtransverse; funicle 7 is longer than 6, still much wider than long. Club short.

Described from one female captured in forest, December 26, 1912.

Habitat: Capeville (Pentland), Queensland.

Type: No. *Hy 2782,* Queensland Museum, Brisbane, the specimen on a slide.

What I thought was the abdomen of this specimen, which had become separated, bore six distinct purplish black cross-stripes, the first at base and all intersected by a median longitudinal stripe. Valves of ovipositor are black. Abdomen conic-ovate, none of the segments greatly lengthened.

MUSCIDEA new genus.

Female:—In Ashmead's table runs to this genus which was formerly without status, the genotype being undescribed. I adopt the name for the following species. Head wider than long, the antennæ 9-jointed with one very short ring-joint, the club solid and as long as the funicle and much wider. Mandibles small, acute. Hind tibial spur normal for the family.

Postmarginal vein absent, the stigmal long but somewhat shorter than the marginal. Scutellum simple. Second segment of abdomen occupying only a third of the surface, together with the third segment which is shorter, occupying one half. Fourth segment transverse linear. Propodeum at apex contracted into a short neck which appears like a petiole but is not considered so. Pronotum about half the length of the scutum. Postscutellum short, crescentic, foveate, the scutellum at apex very broadly or flatly convex. Propodeum with a short median carina between its neck and the apex of postscutellum on either side of which are foveæ arranged transversely. Abdomen depressed, ovate, as long as the thorax. Hind femur swollen. Parapsidal furrows distinct. Occiput concave. Frons broad. Propodeal spiracle minute, round. Head lenticular.

Male:—Not known.

Type: The following species.

1. MUSCIDEA BRUNNEIVENTRIS new species.

Female:—Length, 1.30 mm.

Black with a purplish tinge, the wings hyaline, the abdomen, legs and antennæ yellowish brown, the head and thorax reticulated, shining, the propodeum foveate. Distal third of abdomen above sordid. Lateral wing of propodeum (at the spiracle and for some distance around) glabrous. Funicle 5 longest and widest, distinctly wider than long as are the others, 1 smallest, 2 longer, 3 and 4 subequal, still longer but distinctly smaller than 5 which is much shorter than the normal pedicel.

Described from one female captured in forest, August 7, 1913.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2783*, Queensland Museum, Brisbane, the specimen on a tag; head, a fore wing, middle and hind tibia on a slide.

MUSCIDEOPSIS new genus.

Female:—Like *Muscidea* but the mandibles tridentate, the postmarginal and stigmal veins well developed, not very long but distinct, the postmarginal vein somewhat longer than the stigmal and two thirds the length of the marginal. Scutellum with a punctate cross-furrow. The second abdominal segment occupies about one half of the surface. Otherwise about the same but the pronotum is not more than a fourth the length of the scutum. Habitus of a bæine proctotypoid. Abdominal segments following 2 transverse linear.

1. MUSCIDEOPSIS GOLDSMITHII new species. Genotype.

Female:—Length, 1 mm.

Dark metallic blue, the abdomen, legs and antennæ honey yellow, the wings hyaline, the venation pale yellow. Body polished; frons with scattered minute setigerous punctures. Cephalic coxæ bluish. Parapsidal furrows punctate. Scutellum about as long as the scutum. Thorax with a few long setæ from minute punctures. Neck of propodeum appearing from above like a short, stout abdominal petiole. Ring-joint minute; pedicel distinctly longer than any of the funicle joints of which 5 is largest, thrice the size of 1 and distinctly wider than long; all funicle joints wider than long, widening distad; club three fourths the length of the funicle. Scape slender. Propodeum with strong, irregular carinæ.

Male:—Not known.

Described from one female taken by sweeping along a jungle-clad forest streamlet, March 25, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2784*, Queensland Museum, Brisbane, the specimen on a tag, the head and two hind tibiæ on a slide.

Dedicated to Oliver Goldsmith.

MUSCIDEOMYIA new genus.

Female:—Agrees with the description of *Amuscidea* Girault but the postmarginal vein is somewhat longer than the stigmal, the scutellum is without a cross-suture, the abdomen is conic-ovate, longer than the thorax and the mandibles are 3- and 4-dentate, long and slender. Otherwise the same except as noted below.

1. MUSCIDEOMYIA NIGRICYANEA new species. Genotype.

Female:—Length, 0.80 mm. Small, gracefnl, the abdomen pointed.

Very dark metallic blue-black, the abdomen dark metallic green, the wings hyaline; middle and candal tibiæ very pale orange yellowish, the tips of tibiæ and the tarsi white. Scape white, the pedicel black, rest of antennæ brown. Thorax reticulate scaly, the propodenm smooth, very short, the spiracle minute, round, the propodenm shorter at the meson, noncarinate. Abdominal segments not lengthened, the abdomen normal. Stigmal vein with a rather large knob. Pedicel stout, longer than any of the funicle joints which widen distad, 5 largest. Ring-joint small. Club large, its joints distinct, wider than the funicle bnt not as long. Funicle 2 shortest, transverse, 1 globnlar. Flagellum armed with stiff setæ.

Male:—Not known.

Described from one female taken in jungle along the Herbert River, April 6, 1914 (A. P. Dodd).

Habitat: Halifax, Queensland.

Type: No. *Hy 2785*, Queensland Musenm, Brisbane, the specimen on a tag; head and hind tibiæ on a slide with type appendages of *Neomphaloidella brevis* Girault.

Genus ANYSIS Howard.

"Antennæ as with *Aphobetus*, except that funicle joint 2 is twice as long as 1; 3, 4 and 5 subequal in length, increasing in width, and each slightly shorter than 2. Eyes naked; head very broad; occiput strongly concave, its superior margin acute. Thorax well arched; parapsidal sutures meeting axillar sutures; scutellum broad at base, somewhat lengthened, extending over metanotum to vertical plane of base of abdomen, not cross-furrowed. Petiole distinct but very short; abdomen without basal tufts; second segment scarcely half the length of the abdomen. Marginal vein of fore wings three times longer than stigmal, postmarginal about as long as stigmal or slightly shorter; basal nervure not distinct. Basal nervure of hind wings extending at an acute angle toward base of wing. Spur of hind tibia short."

1. ANYSIS AUSTRALIENSIS Howard. Female. Genotype.

" Length, 1.7 mm.; expanse, 3.8 mm.; greatest width of fore wings, .74 mm. General color blue-black, slightly metallic, glistening. Head and thorax with short, sparse, yellowish pile; face delicately shagreened and with fine sparse punctures; mesonotum similarly punctured; metanotum, pleura, and abdomen smooth; metanotum with a median longitndinal rounded carina. Antennæ light brown, tip of club darker, pedicel and tip of scape above black; all femora nearly black in middle, lighter at each end; tibiæ brown. Wing veins dark brown, fore wings infuscated, hind wings hyaline."

Habitat: West Australia. Associated with Coccids.

Types: Most probably in the United States National Mnseum at Washington, D.C., U.S.A.

Subfamily SPHEGIGASTERINÆ.

Tribe ASAPHINI.

Genus ORMYROMORPHA Girault.

This genus belongs to the Asaphini; the abdomen bears a very short petiole.

1. ORMYROMORPHA GLABRA new species.

Female:—Length, 1.70 mm.

The same as the genotype but smaller, the abdomen is impunctate and almost glabrous (cephalic half of segments after 3 faintly scaly), the propodeum bears many two-thirds complete rugæ from cephalic margin and which anastomose, the distal margin of middle stripe of fore wing is also convexed. Propodeum with a distinct neck. Funicle joints increasing slightly in succession distad. Postmarginal vein slightly longer than the stigmal. Pubescence normal in all three species, or nearly so. Segment 2 of abdomen somewhat longer than 3, not especially long. Tuft of pubescence on propodeum laterad of the spiracle. Caudal coxæ imperial purple. Postmarginal and stigmal veins elongate, subequal to marginal. Antennæ inserted below the middle of the face, at the clypeus.

From one female caught October 11 (H. Hacker).

Habitat: Brisbane, Queensland.

Type: No. *Hy 2786*, Queensland Museum, Brisbane, the specimen on a tag; head and hind leg on a slide.

ORMYROMORPHELLA new genus.

Differs from *Ormyromorpha* in that the scutellum bears a distinct cross-suture before apex. Postmarginal and stigmal veins subequal, elongate, a little shorter than the marginal. Abdominal petiole distinct but short. Antennæ inserted at the clypeus. Head convex, a little wider than long. Mandibles tridentate.

1. ORMYROMORPHELLA BIARGENTINOTATA new species.

Female:—Length, 3 mm.

Dark æneous green, the wings trifasciate, the antennæ brownish yellow, also first two pairs of knees, first two tibiæ at tips, first two pairs of tarsi, cephalic tibiæ except dorsad and intermediate three joints of caudal tarsi. First joint of middle tarsus and a transverse dash from each lateral margin, base of segment 3 of abdomen, silvery white. Thorax finely scaly reticulate, the scutellum distad of transverse suture and the postscutellum glabrous, the propodeum densely, rather minutely or finely rugulose. Head scaly like the scutum. Cephalic third of segments of abdomen after 3, scaly. Petiole wider than long, glabrous (dorsad); base of meson of segment 2 of abdomen with about five short sulci. Hind coxa scaly, the caudal femur rather stout. Third or apical stripe of fore wings no longer than the proximal, the large middle stripe from whole of postmarginal vein, its distal margin passing a little distad of apex of stigmal vein. Ring-joints increasing in length distad; funicle 1 longest, quadrate, a little over half the length of the pedicel.

From one female caught by sweeping forest uplands, May 30, 1914 (A. P. Dodd).

Habitat: Maclean (Clarence River), New South Wales.

Type: No. *Hy 2787*, Queensland Museum, Brisbane, the specimen on a tag; head, a fore wing and a hind tibia with slide type of *Ormyromorpha glabra*.

HOLASAPHES new genus.

Female:—Head wider than the thorax, lenticular, the occiput concave; running to *Asaphes* Walker but the antennæ only 11-jointed; club indistinctly 3-jointed, the flagellum clavate, the first funicle joint like a ring-joint. Like *Asaphoideus* Girault but the hind tibial spurs rather long and stout (somewhat stouter than normal in the other genus) and the postmarginal vein is twice or more the length of the marginal which is plainly not twice the length of the stigmal and the ovipositor and valves are distinctly extruded for a third or less the length of the abdomen. The punctate line across scutellum is rather distant from the apex in both genera and it is the fourth abdominal segment which is much the longest in both genera; also in both, the pronotum is subequal to the short scutum. Petiole in this new genus rather shorter than with *Asaphoideus*. Type of latter re-examined (type of *niger*).

With the habitus of a Torymid and somewhat of a Eurytomid.

1. HOLASAPHES GREGI new species. Genotype.

Female:—Length, 1.67 mm., excluding the short ovipositor.

Black, rather shining, the wings hyaline, the legs reddish brown, paler at the articulations and tarsi, the coxæ black; antennæ concolorous with the legs; last funicle joint widest, the joints not much unequal in length, the pedicel much longer than any of the funicle joints. Mandibles strongly trideutate, the teeth subequal (in *Asaphoideus niger*, the lateral tooth is distinctly the longest, the mesal one smallest). Thorax finely, transversely polygonally scaly, the scutellum uniformly sculptured, the abdomen smooth; lateral carinæ rather close to median on propodeum, curved, joining the median a short distance before apex; a deep, curved spiracular sulcus runs directly from the small spiracle. (Spiracular sulcus also present in *Asaphoideus niger* but straighter). Segment 2 of abdomen longer than 3. Pronotum with a faintly indicated line of punctures across distad of middle.

Described from one female captured March 9, 1912 in forest.

Habitat: Horn Island, Torres Strait.

Type: No. *Hy 2788*, Queensland Museum, Brisbane, the specimen on a tag; head and hind tibiæ on a slide.

2. HOLASAPHES EMERSONI new species.

Female:—Length, 1 mm., excluding ovipositor which is exserted for a length equal to a third that of the abdomen.

Very dark shining metallic blue-green, nearly black, the fore wing with a more or less obscure yellowish stain under the marginal and stigmal veins, and which does not extend further caudad than the middle; legs and antennæ pale straw yellow, the cephalic coxæ concolorous with the body. Caudal half of pronotum, the abdomen and the scutellum caudad of the transverse groove, glabrous. Otherwise as in the genotype, or nearly, but the club is distinctly 3-jointed, the head not as large and the antennæ slenderer.

Male:—Not known.

Described from one female captured in a jungle pocket, March 1, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2789*, Queensland Museum, Brisbane, the specimen on a tag; head, hind legs and a fore wing on a slide.

TRIBE SPHEGIGASTERINI.

The Australian genera of this tribe may need thorough revision. The genera are difficult to define.

GENUS SYNTOMOPUS Walker.

1. SYNTOMOPUS AUSTRALIENSIS Girault.

The propodeum bears three distinct carinæ, a median and two lateral. The type is probably a female, stated to be a male in the original description. It has been re-examined. The type measures 1.75 mm., is on a slide and was captured at Kuranda, Q., December 18, 1912.

GENUS MERISMUS Walker.

1. MERISMUS SQUAMOSUS new species.

Female: Length, 1.20 mm.

Dark purplish, the wings hyaline, the stigmal vein about half the length of the marginal, the postmarginal distinctly longer than the stigmal. Legs yellowish brown, also the scape. Thorax reticulate scaly, the scutellum distad of the transverse line glabrous. Propodeum long, with a short neck, strongly tricarinate. Second abdominal segment occupying somewhat over half of the surface, deeply semicircularly emarginate, the third segment not half its length. Mandibles 4-dentate. Petiole a little longer than the hind coxæ. Club long, with an apparent fourth joint near tip, the distal funicle joints quadrate, funicle 1 subequal to the pedicel, somewhat longer than wide. Antennæ 13-jointed with two ring-joints. Pronotum transverse, its cephalic margin subacute.

Male:—Not known.

Described from one female captured by sweeping in forest, April 7, 1913.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2790*, Queensland Museum, Brisbane, the specimen on a tag, the head and hind legs on a slide.

2. MERISMUS SCUTELLARIS new species of A. P. Dodd and A. A. Girault.

Female:—Length, 1.75 mm.

Dark metallic green, the legs (including the coxæ) and antennal scape golden yellow, rest of antennæ black. Scutum and propodeum densely reticulated, the parapsides, axillæ and scutellum almost smooth, and shining. Scutellum with a very distinct cross-suture and also with a deep oval fovea or depression in its centre. Propodeum long, strongly tricarinate. Abdomen short, convex above, straight beneath, the petiole as long as the hind coxæ, the second segment occupying over half of the surface, its caudal margin straight. Wings hyaline; marginal vein scarcely longer than the postmarginal and twice as long as the stigmal. Mandibles 4-dentate. Pedicel somewhat longer than any of funicle joints which are subquadrate, a little longer than wide, club joints longer than wide.

Described from one female caught sweeping foliage and grass along the Mulgrave River, mostly jungle, March 30, 1913 (A.A.G.).

Habitat: Mulgrave River (Gordonvale), Queensland.

Type: No. *Hy 2791*, Queensland Museum, Brisbane, the specimen on a tag, the head and hind leg on a slide.

GENUS POLYCYSTOIDES Girault.

1. POLYCYSTOIDES TENNYSONI Girault.

A female May 14, 1914 by sweeping in forest, Gordonvale. General color black. The fore wings are a little stained proximad. The suture across scutellum is really a ridge and has the appearance of being the apical margin. Type re-examined. The latter is a female on a tag, the head and hind legs on a slide. It measures 2.50 mm. and was taken April 13, 1913.

GENUS HYPOPTEROMALUS Ashmead.

1. HYPOPTEROMALUS VIRIDESCENS (Walsh).

In the detailed description of this North American species given in the Bulletin of the Wisconsin (U.S.A.) Natural History Society, x (1912), on page 25, second line from bottom, *Cephalic aspect* should read *Dorsal aspect.*

2. HYPOPTEROMALUS DUBIUS new species of Girault and A. P. Dodd.

Female:—Length, 1.25 mm.

Differing from the detailed generic description (*see* Bulletin of Wisconsin (U.S.A.) Natural History Society, vol. x, 1-2, June, 1912) in lacking the median carina of the propodeum and the obscure cross-suture on the scutellum; the first funicle joint is small, like a ring-joint and much smaller than the second; and the abdomen, viewed from lateral aspect, is not almost triangular, its ventral margin being but gently convex.

Very dark metallic green, almost black; the propodeum (except at meson) and the abdomen much brighter green, the latter suffused with brown; coxæ and femora brown; tibiæ, tarsi and antennal scape golden yellow; rest of antennæ fuscous. Wings hyaline, venation as in *Hypopteromalus viridescens* (Walsh). Mandibles 3 and 4-dentate, the teeth acute. Head somewhat wider than thorax; thorax rather short and broad, not much longer than wide; scutum fully twice as wide as long, the parapsidal furrows only indicated anteriorly; scutellum, viewed from lateral aspect, distinctly convex. Propodeum rather short and broad; lateral carinæ inconspicuous; spiracles not large, with rather delicate spiracular sulci. Thorax rather finely reticulated, the reticulation in raised lines. Abdomen somewhat shorter and narrower than thorax; petiole short; second segment occupying one third of the surface; remaining segments about subequal. Pedicel distinctly longer than any of the funicle joints; first funicle joint small; second distinctly larger; 2-6 subquadrate, wider than long; club barely twice as long as wide, the three club joints about subequal.

Described from one female caught by sweeping in forest, August 13, 1913 (A. A. Girault).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2792,* Queensland Museum, Brisbane, the specimen on a tag, the head and a hind leg on a slide.

SPHEGIPTEROSEMA new genus.

For diagnosis, see *antea* (these Memoirs, II), p. 323. The genotype is a new species. It measures 1.90 mm. and was taken in May, 1913. Its type is on a tag, the head and hind legs on a slide.

1. SPHEGIPTEROSEMA AUSTRALIENSIS new species of Girault and A. P. Dodd.

Female:—Length, 2.50 mm.

Head and thorax very dark metallic green, almost black, the coxæ concolorous; rest of legs bright golden yellow; abdomen metallic purplish, its petiole yellow; antennal scape and pedicel yellow, rest of antennæ black. Antennæ 13-jointed, with two ring and three club

joints; flagellum gently clavate; first funicle joint somewhat shorter than the second and only a little longer than wide; 4-6 wider than long; club longer than two preceding joints united; first two club joints subequal, third smaller. Wings hyaline; venation golden yellow; marginal and postmarginal veins about subequal, each one third longer than the stigmal, which is slightly curved. Thorax with fine, polygonal reticulation, the reticulation in raised lines. Parapsidal furrows faint but complete. Scutellum with an obscure, transverse groove before apex. Propodeum rather short, broad, scaly, without a median carina but there is a shallow lateral sulcus on each side of meson, running obliquely from the cephalic margin, the lateral margin of each sulcus carinated and thus forming the lateral carinæ; spiracle elliptical, with a deep sulcus running obliquely from its caudal margin. Abdomen viewed from the lateral aspect, straight above, convex beneath; viewed from the dorsal aspect, it is conic-ovate, no longer than the thorax; petiole no longer than the hind coxæ; second segment occupying over one third the surface; third and fourth subequal, each about one half as long as the second; fifth and sixth distinctly shorter than the fourth; eighth conical. Head no wider than long, no wider than the thorax. Mandibles 3 and 4-dentate.

Described from one female captured by sweeping in jungle, June 7, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2793,* Queensland Museum, Brisbane, the specimen on a tag, the head and a hind leg on a slide.

SPHEGIPTEROSEMELLA new genus.

For diagnosis, see *antea* (these Memoirs, II), p. 324. The males have the legs more uniformly fuscous. The *types* are five females on a card, a head, several antennæ and hind legs on a slide. They were reared from bombycid cocoons, April 7, 1911. *Peterosema unicolor* new species is the genotype.

Genus EURYDINOTELLA Girault.

1. EURYDINOTELLA VIRIDICOXA new species.

Female:—Length, 1.30 mm. For rest of diagnosis, see *antea* (these Memoirs, II), p. 319.

Described from a female captured by sweeping in forest along the banks of Cape River, December 27, 1913.

2. EURYDINOTELLA PUNCTATA new species.

Female:—Length, 1.85 mm.

Like *prima* Girault but the abdomen is not darker than the thorax; the coxæ are concolorous; the pedicel is colored like the flagellum; the scape is golden yellow; the abdominal petiole is short, much shorter than the hind coxæ; the third abdominal segment is slightly shorter than the second and the postmarginal vein is twice as long as the stigmal and as long as the marginal. At once differing from *viridicoxa* Giranlt in having a punctate propodeum.

Described from one female caught by sweeping in forest and slight jungle, June 27, 1913 (A.A.G.).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2794,* Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

GENUS EURYDINOTA Foerster.

1. EURYDINOTA PULCHRA new species of Girault and A. P. Dodd.

Female:—Length, 1.60 mm.

Dark metallic blue; coxæ concolorous; rest of legs bright golden yellow; scape yellow; rest of antennæ black. Wings hyaline. Antennæ 13-jointed, with two ring-joints, the club 3-jointed; pedicel a little longer than first funicle joint; funicle joints gradually widening toward the apex; first slightly shorter than second; second and third a little longer than wide; 4-6 somewhat wider than long; first and second club joints about subequal, each somewhat wider than long. Marginal vein fully three times as long as postmarginal; stigmal vein shorter than postmarginal. Thorax densely polygonally reticulated, the reticulation in raised lines; parapsidal furrows incomplete; scutellum simple. Abdomen no longer than the head and thorax united; no wider than the thorax; petiole nearly as long as the hind coxæ; second segment the longest, occupying one third of the surface, a little more than twice as long as third segment; the others all shorter than the third. Propodeum short and broad, with short, distinct spiracular sulci, a short abbreviated median carina and a circular fovea on each side of meson cephalad.

Male:—Not known.

Described from one female caught by sweeping on edge of jungle, May 22, 1913 (A. P. Dodd).

Habitat:—Kuranda, Queensland.

Type: No. *Hy 2795,* Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

GENUS EURYDINOTELOIDES Girault.

Synonym: *Polycysteloides* Girault.

1. EURYDINOTELOIDES FLAVIBASALIS new species.

Female:—Length, 2.50 mm.

Agrees with the generic description excepting that the lateral carinæ of the propodeum are entire and there is no cross-carina; there is also a narrow spiracular sulcus.

Dark brassy green, the wings hyaline, the tegulæ, knees, tibiæ, tarsi, scape and pedicel yellowish brown, the posterior tibiæ and tarsi pale; rest of antennæ dusky. Base of abdomen above broadly (somewhat over half of segment 2 dorsad) and the dorsal incisions very narrowly and more or less obscurely, bright yellow. Whole of thorax rather finely, densely punctate. Propodeal spiracle small, round. Funicle joint 1 a little longer than the pedicel; 5 subquadrate; 1 plainly longer than wide and longest of the funicle. Club ovate, without a terminal seta.

Compare *Aplastomorpha flavobasalis.*

Described from one female caught by Mr. F. P. Dodd on flowers in October.

Habitat: Kuranda, Queensland.

Type: No. *Hy 2796,* Queensland Museum, Brisbane, the specimen on a tag, the head and hind tibiæ on a slide.

GENUS POLYCYSTELLA Girault.

1. POLYCYSTELLA ABDOMINALIS new species of Girault and A. P. Dodd.

Female:—Length, 1.95 mm.

Differing from the generic description in lacking the sinus on the second abdominal segment; the petiole is twice as long as the hind coxæ; propodeum without a median carina but with complete, delicate lateral carinæ; the spiracle is small; at least one mandible tridentate; and the postmarginal vein is over twice the length of the stigmal and one fourth longer than the marginal.

Dark metallic green, the coxæ concolorous; rest of legs, abdominal petiole and antennal scape golden yellow; rest of antennæ black. Wings hyaline, the venation golden yellow. Thorax (including the propodeum) punctate. Abdomen short, convex above and beneath; the third segment viewed from the side, rising abruptly from the second.

Described from one female caught by sweeping in forest, November, 1912 (A. A. Girault).

Habitat: Northern Queensland (Gordonvale near Cairns).

Type: No. *Hy 2797*, Queensland Museum, Brisbane, a female on a tag.

2. POLYCYSTELLA PETIOLATA new species of Girault and A. P. Dodd.

Female:—Length, 2 mm.

Like *abdominalis* but the lateral carinæ on the propodeum are distinct not delicate; there is a distinct sulcus running obliquely from the caudal margin of the spiracle; the postmarginal vein is no longer than the marginal; the abdominal petiole is metallic; and the fourth segment occupies one half of the surface and is as long as the second and third combined (scarcely longer than the third and not equal to one third of the surface in *abdominalis*). Mandibles not seen; funicle joints subquadrate.

Described from one female caught by sweeping in forest August 4, 1913 (A. A. Girault).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2798*, Queensland Museum, Brisbane, the specimen on a tag.

EURYDINOTOMORPHA new genus.

For diagnosis, see *antea*, p. 320.

1. EURYDINOTOMORPHA PAX new species.

A female of this species was caught by sweeping in jungle, Gordonvale, near Cairns, July 31, 1913 (A. P. Dodd). "The legs in this specimen are wholly golden yellow, the coxæ suffused with metallic. In the type, the femora and tibiæ are darker, but not much darker than the tarsi. The median carina of propodeum, in both specimens, is one third complete from base." (A. P. Dodd.)

The pubescence is quite normal.

2. EURYDINOTOMORPHA GRANDIS new species.

Female:—Length, 4 mm.

Dark metallic brassy green; the abdomen somewhat brownish; coxæ concolorous; femora and antennal scape and pedicel bright brownish yellow; tibiæ and tarsi (except apical joint) white. Wings hyaline, the venation dark. Otherwise like the genotype but the joints of the flagellum are longer and the propodeum has a short neck and lacks the abbreviated median carina.

Described from one female caught by sweeping in jungle, November 15, 1913 (A. P. Dodd).

Habitat: Harvey's Creek (near Cairns), Queensland.

Type: No. *Hy 2799*, Queensland Museum, Brisbane, the specimen on a tag, the head and hind legs on a slide.

3. EURYDINOTOMORPHA BASALIS new species.

Female:—Length, 4.15 mm.

Very similar indeed to *grandis* but differing in that the abdomen ventrad is reddish brown (in *grandis* the middle of the abdomen rather broadly—nearly a third of the surface—dorsad is reddish) and the femora and tibiæ are uniformly rich reddish brown (the tibiæ are white in *grandis*); rest of abdomen dark metallic blue-green. The abdomen dorsad is

very finely transversely lineolated, segment 2 glabrous, segment 3 lineolated only cephalolaterad, 4 only laterad; similarly sculptured in *grandis* and in the genotype but less densely in the latter; in all three segment 7 is as long as 2; in the genotype, segment 3 is only about half the length of 4, in *grandis* only slightly shorter while in *basalis* 3 and 4 are subequal and more transverse, each somewhat shorter than with *grandis*. In all three, the lateral carinæ are present, with a more or less distinct fovea just mesad of its origin; lateral carina short, curved mesad around the fovea. Pedicel (in *basalis*) wholly black. Antennæ and mandibles as in *grandis*. Segment 7 is pilose dorsad in all three species and all three bear a short neck at apex of the conical propodeum.

Described from one female caught in forest May 22, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2800*, Queensland Museum, Brisbane, the female on a tag with type of *grandis*.

4. EURYDINOTOMORPHA INCERTA new species.

Same as *pax* but lacks the median carina (*pax* has the middle coxa lemon yellow), the sculpture of the scutellum is denser but especially the parapsides which are scaly punctate, rather coarsely scaly in *pax*; also the tibiæ are white. Differs from *fusciventris* in having the abdomen wholly dark metallic green, the general color of the thorax much more brassy. From *grandis* in having the abdomen of uniform color and from *basalis* in that the abdomen is wholly metallic, the tibiæ and tarsi white, the caudal coxæ metallic only laterad (wholly metallic in *basalis*). In all the species there is a fold passing obliquely across caudad of spiracle and joined to the short lateral carina. Hind tibiæ reddish just below knees. The middle coxæ are like the legs.

From one female caught in jungle, June 3, 1914 (A. P. Dodd).

Habitat: Grafton (Clarence River), New South Wales.

Type: No. *Hy 2801*, Queensland Museum, Brisbane, the specimen on a tag; hind tibiæ and head on a slide with slide type of *Aplastomorpha 5-fasciata*.

The genotype measures 3 mm. and was captured October 28, 1911, by sweeping. Its type is a female on a tag and a slide bearing the head and the hind legs.[3]

PSEUDOSPHEGIGASTERUS new genus.

For diagnosis, see *antea*, p. 322.

1. PSEUDOSPHEGIGASTERUS FLAVIPES new species of Girault and A. P. Dodd.

Female:—Length, 1.90 mm.

Like *æneus* Girault but the legs (including the coxæ) are golden yellow, the antennal scape golden yellow, pedicel and ring-joints brown, rest of antennæ black; second funicle joint a little shorter than first, the fifth longer than wide, not subquadrate. Abdominal segments as in *æneus*. Mandibles plainly 3- and 4-dentate.

Described from one female caught by sweeping in jungle, November 13, 1913 (A. P. Dodd).

Habitat: Gordonvale and Harvey's Creek (Cairns), Queensland.

Type: No. *Hy 2802*, Queensland Museum, Brisbane, the specimen on a tag, the head on a slide. Type locality Gordonvale.

A second female was subsequently found labelled "Sweeping in jungle, Harvey's Creek, near Cairns, November 15, 1913 (A. P. Dodd)."

[3] *Antea*, II, p. 320, line 6 of the description of *fusciventris*, *Catolaccus* read *Aplastomorpha*.

2. PSEUDOSPHEGIGASTERUS ALBIPES new species of A. P. Dodd and A. A. Girault

Female:—Length, 2.70 mm.

Differs from the generic description in bearing an obscure cross-carina on the scutellum and in having complete lateral carinæ on the long propodeum.

Dark metallic green, the abdomen bluish, the legs and antennal scape white, the front coxæ somewhat dusky, pedicel brown, rest of antennæ black.

Wings hyaline; stigmal vein half as long as the postmarginal, the latter distinctly shorter than the marginal. Thorax polygonally reticulate, the reticulation in raised lines, rather coarser between the carinæ of propodeum, the propodeum laterad of the carina, the axillæ and scutellum caudad of the suture very finely scaly. Abdomen rather broader than the thorax, conic-ovate, the second segment occupying about one third of the surface. Mandibles 3- and 4-dentate. Funicle joints all longer than wide, the first distinctly the longer, the fifth as long as the pedicel, the club with a terminal spur.

Described from one female caught in jungle, February 11, 1914 (A. P. Dodd).

Habitat: Babinda, Queensland.

Type: No. *Hy 2303,* Queensland Museum, Brisbane, a female on a tag; head and hind leg on a slide.

The genotype is a new species. It measures 1.25 mm. and was taken March 12, 1912. The type is on a tag, the head and hind legs on a slide.

Genus PARACROCLISIS Girault.

1. PARACROCLISIS WASHINGTONI Girault.

The distal three segments of the abdomen dorsad are finely scaly. Type re-examined.

ACROCLISOIDES new genus of Girault and A. P. Dodd.

Female:—Like *Paracroclisis* Girault but the propodeum is short, its spiracles are small and rounded, its lateral carinæ absent; the postmarginal vein is a fourth longer than the marginal, the latter slightly thickened; stigmal vein nearly as long as marginal, straight, with a large round knob; the fourth abdominal segment not twice as long as the second. Also, the petiole is only a little longer than wide. Head very large.

1. ACROCLISOIDES MEGACEPHALUS new species of Girault and A. P. Dodd. Genotype.

Female:—Length, 1.60 mm.

Head and thorax dark metallic green; first two pairs of coxæ concolorous; rest of legs and antennal scape and pedicel golden yellow, rest of antennæ black; abdomen dark metallic blue. Fore wings hyaline, with an obscure dusky spot just beneath knob of stigmal vein. Head much wider than the thorax, the vertex narrow, the frons directed cephalad, mandibles 4-dentate. Pronotum very short. Parapsidal furrows complete, distinct. Scutellum as in *Paracroclisis.* Propodeum scaly. Abdominal petiole not slender, not as long as hind coxæ; fourth segment occupying a half of the surface (excluding petiole). Antennæ 13-jointed, with two ring and three club joints; pedicel scarcely longer than wide, the first funicle joint distinctly longer than pedicel and twice as long as wide. Funicle not clavate, the joints gradually decreasing in length but the last joint plainly longer than wide; the club as long as the two preceding joints united.

Described from one female caught by sweeping in jungle, November 1, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2804*, Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

2. ACROCLISOIDES LATICEPS new species of A. P. Dodd and A. A. Girault.

Female:—Length, 1.75 mm.

Very similar to *megacephalus* but the hind coxæ also concolorous, the fore wings hyaline, the postmarginal vein no longer than the marginal, the pedicel only suffused with yellow, the last three funicle joints yellow, ringed with black apically, the abdomen longer, oval, the fourth segment occupying less than a half of the surface, the abdomen not squarely cut off behind it as in *megacephalus*. All three species have very large, 4-dentate mandibles.

Described from one female caught in forest, January 27, 1914 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2805*, Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

3. ACROCLISOIDES MAJOR new species of A. P. Dodd and A. A. Girault.

Female:—Length, 2.50 mm.

Similar to the genotype but much larger, all coxæ concolorous, rest of legs and antennal scape and pedicel lemon yellow, fore wings hyaline; head large but only a little wider than the thorax, the vertex not narrow, mandibles very large, petiole of abdomen yellow, not longer than hind coxæ nor half as long as rest of abdomen, segments 2-4 subequal, the remaining segments very short and hidden; stigmal vein somewhat longer than the marginal and a little shorter than postmarginal; funicle joints longer.

Described from one female caught by sweeping edge of jungle, December 20, 1912 (A. P. Dodd).

Habitat: Kuranda, Queensland.

Type: No. *Hy 2806*, Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

EPIPOLYCYSTUS new genus.

Female:—Like *Neopolycystus* Girault but the club lacks the nipple-like fourth joint (or at least it is barely indicated) and is only 2-jointed, the fourth segment of abdomen is a little longer than the second, the third a little shorter, the three combined occupying two thirds of the surface. Also the propodeum is quite different in shape, being conical, very short at the spiracle (in *Neopolycystus* nearly as long from the spiracle as along the meson, the short neck making the difference), long at meson. Segments 2 and 3 of abdomen caudad at meson with very slight notches. Segment 5 of abdomen transverse sublinear, not half the length of segment 4. Antennæ 12-jointed with three ring-joints.

1. EPIPOLYCYSTUS ASILUS new species. Genotype.

Female:—Length, 1.30 mm.

Dark metallic green, the wings hyaline; all of each leg and the scape yellow-brown, also first two ring-joints which are smaller than the third. Funicle joints more or less equal, enlarging slightly distad, each a little wider than long, the pedicel distinctly longer. Head

and thorax polygonally reticulated, the lines not raised, the propodeum a little smoother. Third ring-joint distinctly larger than the other two.

Described from one female captured on a window, October 25, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2807*, Queensland Museum, Brisbane, the specimen on a tag, the head and a hind leg on a slide.

NEOPOLYCYSTELLA new genus.

Female:—Similar in all details to *Epipolycystus* Girault but the fifth abdominal segment is not transverse-sublinear but long, longer than the third, over half the length of segment 4 which is longest. Postmarginal vein somewhat shorter than the marginal. Propodeum with lateral carinæ, longer at the spiracle which is situated just above and cephalad of a "gulley." Segment 3 of abdomen not half the length of segment 4. Head a little wider than long (cephalic aspect), the antennal club 3-jointed.

1. NEOPOLYCYSTELLA SICARIUS new species. Genotype.

Female:—Length, 2.10 mm.

Dark metallic green, the wings hyaline, the coxæ concolorous, the legs reddish brown; abdomen shining, polished; head and thorax uniformly punctate. Pedicel longer than first funicle joint, the antennæ black; funicle 1 longest of the funicle, somewhat longer than wide; funicle 5 quadrate. Club simple.

Described from one female captured by sweeping in the forest, December 2, 1912 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2808*, Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

CRYPTOPRYMNOIDES new genus.

Female:—Petiole of abdomen enlarged at base, short, about two thirds the length of the hind coxæ. Antennæ 13-jointed with two ring-joints, the club 3-jointed. Propodeum short, punctate, without carinæ or a neck, the spiracle minute and with an indefinite spiracular sulcus. Segments 2, 4, and 5 of abdomen subequal, longest, segment 2 occupying about a sixth of the surface, 3 shorter than it, the caudal margins of all straight, segment 6 not much shorter than the others. Both mandibles strongly 4-dentate. Parapsidal furrows absent. Pronotum transverse. Scutellum simple. Marginal vein short, the postmarginal and stigmal veins long, the postmarginal slightly longer, the stigmal slightly shorter, than the marginal. Abdomen ovate.

1. CRYPTOPRYMNOIDES RABIOSUS new species. Genotype.

Female:—Length, 1.50 mm.

Very dark metallic green, the wings hyaline; antennæ black; legs concolorous, the knees and tarsi (except distal joint) pale. Mandibles with the inmost tooth somewhat truncate. Funicle joints all a little wider than long, subquadrate. Thorax densely polygonally reticulated, the reticulation in raised lines.

Described from one female captured by sweeping miscellaneous vegetation along the Pioneer River, October 19, 1911 (A.A.G.).

Habitat: Mackay, Queensland.

Type: No. *Hy 2809*, Queensland Museum, Brisbane, the above specimen on a tag, plus a slide bearing head and a hind leg.

ASYNTOMOPUS new genus of Girault and A. P. Dodd.

Female:—Head not much wider than the thorax. Mandibles plainly tridentate, the outer tooth long and curved. Antennæ 13-jointed, two ring-joints, three club joints. Pronotum not especially large. Parapsidal furrows complete, distinct. Scutellum with a cross-suture before the apex. Propodeum long, punctate, with a distinct median and true lateral carinæ; also deep, distinct spiracular sulci running its whole length. Abdominal petiole long and slender, fully twice as long as the hind coxæ; second segment the longest, occupying nearly one third of the surface (excluding the petiole); segments 3-5 subequal, each one half as long as the second; caudal margins of segments straight. Postmarginal and marginal veins subequal; stigmal vein very oblique, two fifths as long as the marginal.

1. ASYNTOMOPUS FLAVISCAPUS new species of Girault and A. P. Dodd. Genotype.

Female:—Length, 2.75 mm.

Dark metallic blue-green; coxæ concolorous; rest of legs and antennal scape golden yellow; all femora and posterior tibiæ dusky at the centre; rest of antennæ black. First funicle joint twice as long as wide, distinctly longer than the pedicel; 2-6 gradually shortening, the sixth as long as the pedicel and longer than wide; club as long as the two preceding joints united. Wings hyaline.

Described from one female caught by sweeping in jungle, August 31, 1913 (A.A.G.).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2810,* Queensland Museum, Brisbane, the specimen on a tag, the head and hind legs on a slide.

TRIPOLYCYSTUS new genus of A. P. Dodd.

Female:—In Girault's table of genera (1913), running near *Eurydinotomorpha* Girault and *Polycysteloides* Girault. Head not wider than thorax, no longer than wide. Mandibles 4-dentate. Antennæ 13-jointed, with three ring and three club joints, the funicle joints subquadrate. Pronotum short. Parapsidal furrows half complete. Scutellum with a *deep cross-suture* before apex. Propodeum rather long, with a distinct neck, with lateral carinæ and narrow spiracular sulci; median carina absent. Abdominal petiole very short, hidden by the propodeal neck. Abdomen conic-ovate, no longer than thorax, depressed above, convex beneath; second segment occupying a third of surface, third and fourth subequal, the others shortening. Marginal vein somewhat thickened, postmarginal as long as marginal, stigmal distinctly shorter.

Type: The following species.

1. TRIPOLYCYSTUS SULCATUS new species of A. P. Dodd.

Female:—Length, 1.75 mm.

Very dark metallic green, the coxæ concolorous, the abdomen brighter, first two pairs of femora brownish, rest of legs and antennal scape golden yellow, rest of antennæ black. Wings hyaline. Thorax polygonally reticulated, the reticulation in raised lines, the propodeum punctate. Pedicel a little longer than any of the funicle joints of which the first is smallest, a little wider than long, the others slightly longer than wide; first club joint longest of the club.

Described from one female caught on a window, February 17, 1914 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2811,* Queensland Museum, Brisbane, the specimen on a tag; head and hind legs on a slide.

POLYCYSTOMYIA new genus of A. P. Dodd.

Female:—In Girault's table of genera (*see* Memoirs of Queensland Museum, vol. II) running close to *Polycysteloides* Girault and *Eurydinotomorpha* Girault but differing from both these genera in bearing a noncarinate propodeum. Antennæ 13-jointed with three ring and three club joints. Parapsidal furrows one third complete. Scutellum simple. Propodeum punctate, rather long, without carinæ or sulci. Abdominal petiole very short; abdomen conic-ovate, depressed above, gently convex beneath, no longer than the head and thorax united; second segment occupying barely one fourth of surface, 3-5 subequal, each barely half as long as 2, 7 somewhat lengthened. Marginal vein somewhat longer than the postmarginal, the latter almost twice as long as the stigmal. Mandibles not seen.

1. POLYCYSTOMYIA PUNCTATA new species of A. P. Dodd. Genotype.

Female:—Length, 2.60 mm.

Dark metallic green, the posterior coxæ and base of other coxæ concolorous, rest of legs and antennal scape and pedicel golden yellow; rest of antennæ black. Thorax, including propodeum, densely punctate. Wings hyaline. Pedicel subequal to last funicle joint, which is distinctly longer than wide, funicle 1 distinctly longer than the pedicel, the others gradually shortening; club no wider than funicle, as long as two preceding joints united; first two club joints subequal; ring-joints increasing in size, the first small.

Described from one female caught by sweeping in jungle, December, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2812,* Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

PTEROSEMELLA new genus.

For diagnosis, see *antea,* p. 317. The genotype is a new species. It measures 1.85 mm. and its *types* are six males on a card, the head and hind legs on a slide. The tegulæ are pallid.

Genus MERISMOMORPHA Girault.

1. MERISMOMORPHA ACUTIVENTRIS Girault.

The type measures 1.50 mm., is a female on a tag and was captured May 18, 1913.

PTEROSEMIGASTRA new genus of Girault and A. P. Dodd.

Female:—Head no wider than the thorax. Antennæ 13-jointed, with two ring and three club joints. Pronotum not long; scutum with complete parapsidal furrows; scutellum with a delicate cross-suture. Propodeum scaly, with a distinct median carina, also a cross-carina, the lateral ends of which curve abruptly cephalad, joining the cephalic margin mesad of the spiracles and thus forming short lateral carinæ; spiracle small and rounded, without distinct spiracular sulci. Petiole of abdomen short and stout. Abdomen conic-ovate, longer than the thorax, straight above, convex beneath; second segment occupying one third of the surface; third and fourth segments subequal, each one half shorter than the second; fifth half as long as the third; sixth and seventh subequal, each as long or slightly longer than the fourth. Ovipositor exserted for a length equal to one third that of the abdomen. Marginal vein one third longer than the postmarginal, the latter twice as long as the stigmal. Mandibles 3 and 4-dentate.

1. PTEROSEMIGASTRA ŒNONE new species of Girault and A. P. Dodd. Genotype.

Female:—Length, 2.10 mm.

Very dark metallic purplish, the coxæ concolorous, the second abdominal segment brilliant metallic blue-green; rest of legs, antennal scape and funicle joints 4-6, bright golden yellow; rest of antennæ dusky yellow. Wings hyaline. Pedicel distinctly longer than any of the funicle joints; funicle joints slightly clavate, almost subequal; 1-5 longer than wide, the sixth quadrate; club as long as the two preceding joints combined; first club joint as long as the other two combined.

Described from one female caught by sweeping jungle along a forest stream, June 14, 1913 (A. P. Dodd).

Habitat: Northern Queensland (Gordonvale near Cairns).

Type: No. *Hy 2813*, Queensland Museum, Brisbane, a female on a tag, the head and hind legs on a slide.

2. PTEROSEMIGASTRA NIGRIFLAGELLUM new species of Girault and A. P. Dodd.

Female:—Length, 1.75 mm.

Dark metallic green, the coxæ concolorous; abdomen suffused with brown, the first segment bright metallic blue-green; femora dusky brown; tibiæ, tarsi and antennal scape golden yellow; pedicel dusky brown; flagellum black. Differing from *œnone* in having the marginal and postmarginal veins subequal, each over twice as long as the stigmal; abdomen slightly convex above, the second segment not occupying one fourth of the surface, 3 not a half the length of 2, 4 nearly twice as long as 3, 5 a little longer than 4 and subequal to 2, 6 subequal to 4; funicle joints all longer than wide, the first the smallest.

Described from one female caught in jungle, July 31, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2814*, Queensland Museum, Brisbane, the specimen on a tag, the head on a slide.

PARAPOLYCYSTUS new genus of Girault and A. P. Dodd.

Female:—Head much wider than the thorax; antennæ inserted on about the middle of the face, 13-jointed with three ring-joints, three club joints; third ring-joint much longer than the other two and as long as wide. Mandibles tridentate. Parapsidal furrows half complete. Scutellum carinated posteriorly. Propodeum scaly, with a median carina and a distinct cross-carina; very deep, distinct spiracular sulci, the mesal margin of the sulci delicately carinated. Marginal vein two thirds longer than the postmarginal and twice as long as the stigmal. Abdomen short, scarcely as long as thorax; petiole shorter than hind coxæ, longer than wide, vertical; segment 2 occupying nearly a third of surface, almost twice as long as 3. Differing from *Polycysteloides* Girault in having tridentate mandibles, a longer marginal vein, distinct spiracular sulci, a carinated caudal margin of the scutellum, a shorter abdomen and a longer second abdominal segment. The cross-carina on scutellum is at caudal margin as seen from direct dorsal aspect and has analogy to the cross-suture frequently found in this place but is not one as usually understood.

1. PARAPOLYCYSTUS PULCHRICORNIS new species. Genotype.

Female:—Length, 2 mm. Short, stout. Head and thorax very dark metallic green, almost black; coxæ and first two pairs of femora concolorous; posterior femora and all tibiæ and tarsi bright golden yellow; abdomen metallic green, not bright but much brighter than thorax; scape, pedicel and ring-joints golden yellow; funicle suffused with brown; club black. Wings hyaline. Antennæ gently clavate. Pedicel a fourth longer than funicle 1, the latter not as long as combined length of ring-joints, one third longer than wide, 2 as long as 1, 3-5 shorter, wider than long; club nearly as long as three preceding joints united, first joint the largest.

The form and sculpture of this species is so clear-cut as to appear to have been chiselled out by a sculptor. The head is large.

Described from one female caught in jungle July 31, 1913 by sweeping (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2815*, Queensland Museum, Brisbane, the specimen on a tag; head and hind leg on a slide.

A second female same place, August 20, 1914 (A.A.G.).

2. PARAPOLYCYSTUS CLAVICORNIS new species of A. P. Dodd.

Female:—Length, 3 mm.

Similar to the genotype, *pulchricornis*, but the abdomen is bright burnished coppery, all the legs (except the coxæ) are blood red, antennæ rather darker, the third ring-joint is much larger, distinctly longer than wide and the raised reticulation of the thorax is coarser, segments 2-4 of abdomen excised at meson of caudal margin (only second and third in *pulchricornis*).

Described from one female labelled "Stradbroke Island, H. Hacker, November 5, '13."

Habitat: Stradbroke Island, Southern Queensland.

Type: No. *Hy 2816*, Queensland Museum, Brisbane, the specimen on a tag, the head and hind legs on a slide.

In this genus the antennæ are clavate, the club much enlarged, the third ring-joint enlarged and forming a transition between the ring and funicle joints, more especially so in *clavicornis*. The petiole is vertical and from a distinct knob-like neck of the propodeum. Head convex, round from cephalic aspect.

POLYCYSTELOMORPHA new genus.

Female:—Running to *Polycystoides* Girault but both mandibles 4-dentate, the petiole of abdomen slender, distinctly much longer than the hind coxæ (nearly twice longer), the parapsidal furrows distinct and complete, narrow, the scutellum simple, the form shorter, the body of the abdomen no longer than the thorax, convexed as in *Polycystella*, the second segment occupying somewhat over half of the surface. Propodeum triareinate, long, the lateral carinæ curved, the spiracle minute, round, without a definite sulcus. Mandibles deeply cleft. Postmarginal vein shorter than the marginal, the well-developed stigmal vein a third shorter, curved; the postmarginal not especially long for that vein and really somewhat (a third) shorter than the marginal which is of moderate length but not long. Club solid; two ring-joints. Pronotum transverse.

1. POLYCYSTELOMORPHA FLAVIFEMUR new species. Genotype.

Female:—Length, 1.15 mm.

Dark æneous, the wings hyaline, the coxæ concolorous, the rest of the legs and all of each antenna pale yellow, the club dusky. Head and thorax densely scaly, also the petiole, rest of abdomen highly polished. Venation pale. Antennæ inserted on a level with the ventral ends of the eyes (or thereabouts), rather distant from the clypeus; joints 2 and 3 of funicle longest, a little longer than wide, 1 barely longer than wide, 5 subquadrate, 6 wider than long; pedicel a little longer than funicle 2; club wider, without a terminal spine. A fovea at cephalic margin of propodeum near base of lateral carina.

Described from one female captured in forest, August 10, 1913 by sweeping (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2817*, Queensland Museum, Brisbane, the specimen on a tag, the head and hind tibiæ on a slide.

NEOPOLYCYSTUS new genus.

Male:—Head (cephalic aspect) round, the mandibles 3- and 4-dentate, the antennæ 13-jointed with three ring-joints, the club 3-jointed (but with a distal, tubercle-like fourth joint, the antennæ 14-jointed). Parapsidal furrows two-thirds complete from cephalad. Scutellum simple. Propodeum punctate, noncarinate but with moderately short, complete spiracular sulci and a fovea at cephalic margin half way to spiracle from meson; spiracle not large. Postmarginal vein as long as the marginal, the stigmal a third or more shorter. Petiole slender, distinctly longer than the hind coxæ, the second abdominal segment next longest of the segments, occupying about a fourth of the surface, its caudal margin convex, the third segment as long as the second, the fourth longest, occupying half of the surface and inclosing all of the rest. Pronotum transverse-linear. Fore wings with short marginal fringes.

1. NEOPOLYCYSTUS INSECTIFURAX new species. Genotype.

Male:—Length, 1.75 mm.

Dark metallic green, the wings hyaline, the scape, legs, cephalic coxa (more or less) and the tegula, yellowish brown; femora washed with metallic. Rest of antenna black, the coxæ concolorous. Head and thorax reticulate punctate, the abdomen polished, without sculpture. Pedicel slightly longer than funicle 1, which is slightly the longest of the funicle, barely longer than wide, the fifth or distal joint plainly wider than long; distal club joint simple.

Described from four specimens selected at random from sixteen on a card in the collections of the National Museum of Victoria at Melbourne, labelled "29. Ringwood, Victoria. 18-12-03," and mounted with a flower-like cluster of red nematocerous, dipterous pupæ on the tip of a leaf. The pupæ bore two terminal horns cephalad. The pteromalids emerged through a single, large, round hole in the side of each pupa.

Habitat: Ringwood, Victoria.

Types: In the National Museum, Melbourne, the above specimens; a slide with a head, hind legs and antennæ.

TRIGONOGASTRELLA new genus.

Female:—Head (cephalic aspect) a little wider than long, the antennæ inserted in the middle of face, 13-jointed with two ring-joints, the club 3-jointed, the antennæ slender. Parapsidal furrows half complete. Both mandibles 4-dentate. Scutellum simple. Propodeum punctate, with a complete median carina and straight spiracular sulci, the spiracle cephalic, small, round-oval. Petiole of abdomen distinctly projecting caudad of hind coxæ which are inserted farther cephalad; petiole distinctly longer than wide. Segment 2 of abdomen notched at the meson caudad, longest, occupying somewhat over a third of the surface, segment 4 half its length, distinctly longer than 3 which is short. Postmarginal vein elongate, as long as the marginal, the stigmal distinctly shorter than either, about half the length of the postmarginal, slender.

Male:—The same but the spiracular sulcus is curved and shallower, cylindrical oval instead of conic-ovate, the antennæ filiform.

1. TRIGONOGASTRELLA PARASITICA new species. Genotype.

Female:—Length, 1.35 mm.

Dark metallic green, the wings hyaline, the scape except at tip, tibiæ, knees, tarsi and femora (more or less) yellowish brown, the femora washed with metallic. Head and thorax punctate confluently. Scape slender, distal club joint simple, pedicel subequal to funicle 1 which is somewhat longer than wide, the following joints gradually shortening.

Male:—The same but the femora wholly yellow-brown and the scape; also, the funicle joints are subelongate, the first about twice the length of the pedicel, not as long as the club, the sixth distinctly longer than the pedicel, distinctly shorter than 1.

Described from two male, one female, specimens on a card in the collections of the National Museum of Victoria at Melbourne, labelled "31. Bred from leaves of Artichoke, 12-92."

Habitat: Melbourne, Victoria.

Types: In the National Museum, Melbourne, the above specimens and a slide with the female head, hind leg and male antennæ.

Later, three more specimens from the same collections.

ACROCLISELLA new genus.

Female:—Similar in shape to *Paracroclisis* Girault but segment 4 of abdomen is not enlarged, a little shorter than segment 2, the mandibles are 3- and 4-dentate and the propodeum bears lateral carinæ which about the middle curve in to the median carina, the spiracle oval, moderate. Postmarginal vein elongate, over twice the length of the stigmal but a little shorter than the rather long marginal. The longer marginal vein and different mandibles separate it from *Acroclisoides* Girault and Dodd; also the much longer petiole and slender body. In the table of genera runs to *Lomonosoffiella* but the scutellum lacks the cross-suture and is as in *Paracloclisis*. True spiracular sulci absent.

1. ACROCLISELLA PERPLEXA new species.

Female:—Length, 2.30 mm.

Dark metallic green, the wings hyaline, the venation dusky, the legs except coxæ and the scape dull honey yellow; center of abdomen along meson dorsad suffused with yellow. Antennæ black. Mandibles white, reddish brown at tip. Pedicel shorter than funicle 1 which is longest, wider distad, nearly one and a half times longer than wide at apex, joints 2-4 subequal, somewhat longer than wide, 6 quadrate, 5 subequal to pedicel. Cephalic margin of clypeus near lateral ends emarginate. Head, parapsides, petiole, propodeum, axillæ, pronotum laterad and scutum cephalad, scaly reticulate; rest of thorax punctate, the scutellum a little coarser than scutum. Parapsidal furrows punctate, terminating caudad in an oval fovea which is narrowly separated from the mesal ends of the axillæ, thus incomplete. Abdomen subglabrous, segment 3 at meson of caudal margin with a slight notch, segment 2 depressed. Propodeum with a distinct neck; a large fovea just caudo-mesad of the spiracle, its caudal boundary froming a cross-carina laterad of the lateral carina.

Described from one female.

Habitat: Queensland.

Type: No. *Hy 3830*, Queensland Museum, Brisbane, the specimen on a tag; antenna and hind legs on a slide.

PARAPTEROSEMOIDEA new genus.

Female:—In my table of genera runs to *Apterosemoidea* Girault but differs as follows: The antennæ are inserted below the middle of the face, on or a little below the ventral ends of the eyes, the mandibles are 4-dentate, the abdomen is convexed ventrad. The propodeum without true carinæ but a fold or carina runs from the caudo-mesal part of the spiracle, latero-caudad, then crossing caudad of the spiracle and joining at apex another fold running meso-caudad from cephalo-lateral angle and forming a U at whose month lies the spiracle. Propodeum of nearly uniform length. Abdominal petiole not half the length of the hind coxa. Third ring-joint as long as the other two combined. Otherwise like *Apterosemoidea*. Parapsidal furrows obtuse.

1. PARAPTEROSEMOIDEA SPURCIPENNIS new species.

Female:—Length, 1.35 mm.

Dark metallic green, the legs and scape yellow-brown, the abdomen reddish brown, dark coppery rather broadly at apex and with a not broad metallic stripe across base (also appearance of a narrow dusky stripe across distal edge of segments 2 and 3). Flagellum black; first two ring-joints yellowish; funicle 1 somewhat longer than wide, longest, a little shorter than the pedicel; funicle 5 wider than long, subequal to 2, 3 and 4. Joint 1 of caudal tarsus much longer than any of the others. Fore wing lightly embrowned throughout and with a distinct darker, rather broad cross-stripe from proximal two thirds of the marginal vein and a dark, longer than wide, rectangular area from apex of stigmal vein; the two are obscurely connected by a short midlongitudinal arm. There are also two subhyaline cross-stripes, the first just proximad of the cross-stripe, the second just distad of it, between the cross-stripe and the substigmal area. Under the submarginal vein a darker longitudinal streak caudad. Fore wing with broad hairless line but this is closed cephalad by about six lines of discal cilia. Head and thorax with usual sculpture, finely punctate. Segments 2 and 3 of abdomen caudad at meson with very slight traces of incisions, the abdomen polished except at apex.

From one female caught on forest uplands, May 30, 1914 (A. P. Dodd).

Habitat: Maclean (Clarence River), New South Wales.

Type: No. *Hy 2818*, Queensland Museum, Brisbane, the specimen on a tag; head, hind legs and a fore wing on a slide.

PARATRIGONOGASTRA new genus.

Female:—Agreeing with the description of *Paracroclisis* Girault and running to that genus in my table of genera but differing at once in having segment 4 greatly lengthened, enclosing all but two of the rest of the segments and occupying somewhat over half of the surface (in the other genus four segments are distinct distad of 4). Also, the parapsidal furrows are only a third complete from cephalad, segment 3 of abdomen is a little longer than 2 and is straight caudad at meson, the petiole is about twice the length of the hind coxæ, the propodeum is noncarinate but with distinct spiracular sulci and the postmarginal vein is not quite twice the length of the stigmal, barely shorter than the marginal. Otherwise the same.

1. PARATRIGONOGASTRA VOLTAIREI new species.

Female:—Length, 1.40 mm.

Dark æneous green, the wings hyaline; scape pale; coxæ concolorous, rest of legs reddish brown. Pedicel a little pale, subequal to funicle 1 which is longest, somewhat longer than wide; funicle 6 somewhat wider than long, 5 subquadrate; club wider, the articulations not very distinct. Thorax reticulately punctate, including the propodeum. Hind coxæ and petiole finely scaly. Abdomen glabrous. Propodeum with a more or less distinct fovea at cephalic margin about half way to spiracle from the meson. Abdomen conic-ovate. Mandibles 4-dentate.

Described from one female captured by miscellaneous sweeping, March 29, 1914 (A. P. Dodd).

Habitat: Halifax (Ingham), Queensland.

Type: No. *Hy 2819*, Queensland Museum, Brisbane, the specimen on a tag.

SUBFAMILY DIPARINÆ.

GENUS PANSTENON Walker.

The Australian species have the parapsidal furrows not quite complete, two large ring-joints and a large pronotum. Types of *bellicosus*, *gracilis* and *australiensis* re-examined.

1. PANSTENON CLARUS new species.

Female:—Length, 2.60 mm.

Somewhat like *bellicosus* but stouter and the abdomen is light yellowish brown with a distinct pattern as follows: It is margined conspicuously but not very broadly with metallic

purple from base to a little beyond middle, the tip above is purple and is preceded by a cross-stripe of purple; between this cross-stripe and the end of the marginal stripe there is along the margin a dot of purple (*bellicosus* has the abdomen brown and margined all around with blackish purple, the distal fourth or somewhat more, purplish). The antennæ are very similar except that in this species the joints are a little longer (in both the joints shorten distad, 1 being somewhat longer than six which is only a little longer than wide); in *gracilis* 2 and 3 are subequal and somewhat the longest, longer than 6; in *australiensis* the joints are all somewhat longer than wide and subequal. In *gracilis*, the abdomen is margined somewhat as in this species but more obscurely, the colors dull and the pattern obscured. Scutum and scutellum scaly punctate, the propodeum rugulose; cephalic part of scutum, pronotum and head scaly (sculptured as in *bellicosus* except that in that species the scutellum is not punctate but rather coarsely scaly).

Described from one female captured in forest, April 12, 1914.

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2821*, Queensland Museum, Brisbane, the specimen on a tag; head and hind legs on a slide.

A second female was obtained same place, May 21, 1914.

EPILELAPS new genus.

With a distinct lelapine habitus. Hind tibial spurs single. Fore wings nearly as in the Entedoninæ, the submarginal vein broken and somewhat shorter than the long marginal, the postmarginal longer than the stigmal, only moderate in length. Fore wings rather slender, with long marginal cilia. Antennæ inserted slightly ventrad of middle of the face, 13-jointed with one ring-joint (but in the genotype, funicle 1 is distinctly wider than long), the club 3-jointed, wider than the funicle. Axillæ rather widely separated. Parapsidal furrows complete. Club rather abruptly formed. Wings without a pattern, hyaline or subhyaline. Mandibles tridentate. Other structures as in *Lelaps*.

1. EPILELAPS HYALINIPENNIS new species. Female. Genotype.

Length, 1.75 mm. Black, the wings hyaline, the abdominal petiole, neck of propodeum and the abdomen ventrad, yellowish brown. Legs yellow, also the antennæ but the club black; pedicel elongate, one ring-joint, the funicle joints all more or less subquadrate. Scutellum distad of transverse suture (or distal third) longitudinally striate. Thorax scaly punctate, the propodeum rugose, with a tooth dorso-laterad, distad of middle. Abdomen glabrous. Pronotum separated, transverse. A common species.

Habitat: Gordonvale (Cairns), Queensland. Jungle, June 7, 1913, two females.

Type: No. *Hy 2822*, Queensland Museum, Brisbane, one female on a tag, a hind leg and the head on a slide.

2. EPILELAPS PONDEROSA new species. Female.

Length, 1.35 mm. Much like the genotype but the wings slightly embrowned throughout, the abdomen dorsad is black only at proximal and distal thirds, the proximal funicle joint is transverse like a ring-joint yet twice the length of the ring-joint and the distal funicle joint is blackish. Segment 2 of abdomen over half the length of that region. Mandibles tridentate.

Habitat: Gordonvale (Cairns), Queensland. Jungle, June 16, 1913.

Type: No. *Hy 2823*, Queensland Museum, Brisbane, the above specimen on a tag, the head and appendages on a slide with the type of *Aphelinus nox* Girault.

A second female was taken in the jungle at Gordonvale, July 24, 1913. Compared with type. The postmarginal vein is twice the length of stigmal, the latter rather short. Abdominal petiole longer than wide but shorter than the long caudal coxæ. Original description verified.

PSEUDIPARA new genus.

Female:—Differs from *Epilelaps* in lacking the cross-suture on the scutellum, in having the marginal fringes of the fore wing of nearly normal length, the postmarginal vein elongate and the parapsidal furrows convergent caudad, meeting just before apex and incomplete. Differs from *Panstenon* and *Dipara* in having seven funicle joints and only one ring-joint which is large. Petiole of abdomen a little longer than the hind coxæ. Otherwise like *Epilelaps*. Postmarginal vein over thrice the length of the stigmal. Club solid, the antennæ inserted on the middle of the face.

1. PSEUDIPARA ALBICLAVA new species. Genotype.

Female:—Length, about 2 mm. Slender.

Dark metallic purplish, the legs and scape yellow, wings uniformly slightly dusky; club white; funicle and pedicel black. Pedicel slightly longer than funicle 1 which is longest and somewhat over twice longer than wide, 2-4 subequal, each a little shorter than 1, 5 and 6 subequal, a little shorter, 7 a little shorter than 6, distinctly longer than wide. Third tooth of mandible obtuse, the other two acute. Ocelli nearly in a straight line, distant from the eyes. Marginal fringes of fore wing a little longer than usual, about a seventh of the greatest wing width, not as long as some of the bristles from the venation. Marginal vein twice or more the length of the submarginal. Parapsidal furrows not attaining pronotum, running off laterad. Thorax delicately scaly; scutellum subglabrous but with longitudinal striæ laterad. Abdomen glabrous, the petiole with strong longitudinal carinæ; second segment occupying two thirds of the surface. Propodeum with a distinct neck and with a few interlacing cross and longitudinal carinæ which form very large fovea-like areas; no true median and lateral carinæ. Abdomen conic-ovate. Axillæ widely separated. Pronotum not especially large. Hind wings dusky; both wings clearer toward base.

Described from one female captured in forest, sweeping at a height from 2,500 to 3,000 feet (Mt. Pyramid), June 3, 1913 (A. P. Dodd).

Habitat: Gordonvale (Cairns), Queensland.

Type: No. *Hy 2824*, Queensland Museum, Brisbane, the specimen on a tag; head, pair of wings and two hind tibiæ on a slide.

SUBFAMILY SPALANGIINÆ.

SPALANGIOMORPHA new genus.

1. SPALANGIOMORPHA FASCIATIPENNIS new species.

For diagnosis, see *antea*, pp. 333-334.

Male:—Antennæ filiform, 11-jointed, with one ring-joint, the distal funicle joint a little longer than wide, a little longer than the pedicel; funicle 1 distinctly longer than wide; club solid. Club and distal two joints of funicle black; rest of antenna pale yellowish. Club much longer than the funicle joints. Mandibles 4-dentate. Abdomen, lateral aspect, globular, the petiole longer than the caudal coxa. Postmarginal and stigmal veins more or less equal, the marginal cilia rather short, not as long as the stigmal vein.

Described from one male taken from the window of a grocery store, Port Douglas, Queensland, October 30, 1911. A female also, captured in a similar situation at Halifax (Ingham), Queensland, February 25, 1913.

The head resembles that of an ant, the antennæ inserted far down near the clypeus. Abdominal petiole moderate. The female genotype measures 1.35 mm. and was captured at Port Douglas, October 30, 1911 from the window of a grocery store. Its type is the female on a tag, the head, hind legs and a fore leg on a slide with the type appendages of *Chalcitelloides nigrithorax io* Girault.

Genus SPALANGIA Latreille.

1. SPALANGIA GROTIUSI Girault.

The cross-line of foveæ on distal scutellum is much more distinct than in *australiensis*, punctate; there is a distinct cross-line of punctures on scutum a little cephalad of middle and caudad of this line a deep puncture at meson and a smaller one laterad near lateral margin; the scutellum lacks the lateral longitudinal line of pin-punctures and other pin-punctures. Scutum glabrous and without other sculpture, practically. Face with a few scattered minute punctures. Type re-examined.

2. SPALANGIA AUSTRALIENSIS Girault.

The lateral margin of propodeum is smooth. Scutellum with a curved lateral longitudinal line of five pin-punctures from inner apex of axilla to cross-line of pin-punctures. The scutum is very finely alutaceous. Pronotum *faintly* sculptured like the abdomen and with scattered pin-punctures. A line of punctures on propodeum parallel to lateral margin from the spiracle to caudal margin. Scutum glabrous laterad; with a mesal foveolate impression with a faint median carina through it. Type re-examined.

3. SPALANGIA VIRGINICA Girault.

The scutellum also lacks the fine punctures elsewhere. Propodeum faintly scaly. Abdominal petiole distinctly longer. Head about as in *grotiusi*. Funicle 1 over twice the length of 2 which is oval, the others gradually lengthening. Pedicel shorter than funicle 2. Type re examined.

4. SPALANGIA PARASITICA new species. Female.

Exactly similar to *grotiusi* but the scutum is distinctly longer, not distinctly wider than long, the cross-line of punctures somewhat *distad* of middle. Funicle 1 is a little wider than long, barely longer than 2 and plainly not half the length of the pedicel. Segment 4 of abdomen occupying nearly half of the surface.

Described from one female captured by sweeping in vicinity of canefields, Herbert River, April 2, 1914 (A. P. Dodd).

Habitat: Ingham, Queensland.

Type: No. *Hy 2825*, Queensland Museum, Brisbane, the above female on a tag.

Later, a female was found which had been captured in jungle, July 23, 1912 at Goondi near Innisfail (Johnstone River).

Both the species *parasitica* and *grotiusi* differ from the other two species in having the propodeum laterad of the lateral line of foveæ, densely rugoso-punctate. The punctate lines on the head are alike in all four species.

Only the abdomen of the Pteromalidæ, as a rule, shrinks after death, so that it is important to examine it closely just after taking the specimen from alcohol. The Eunotinæ, Asaphini and Merisini need careful comparison.

There are some interesting parallelisms in this family with the Lelapinæ and other groups of the Miscogasteridæ. Forms seem to be repeated in widely divergent groups.

Anthony James Cumming, Government Printer, Brisbane.

QUEENSLAND MUSEUM BRISBANE